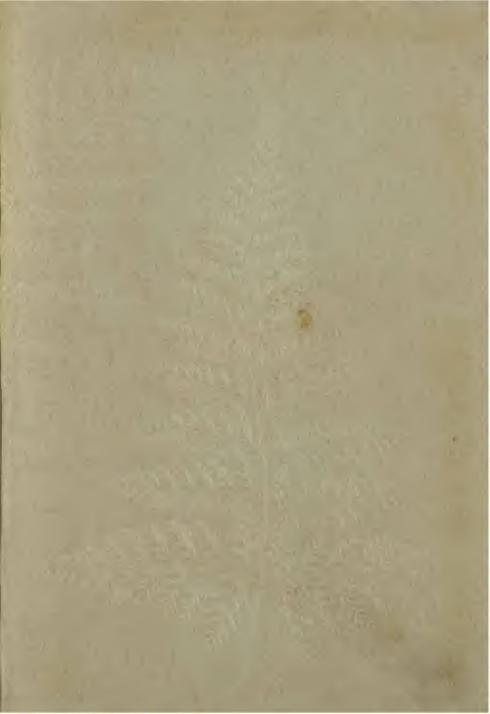
ARCHÆOLOGICAL SURVEY OF INDIA ARCHÆOLOGICAL LIBRARY

ACCESSION NO. 43853 CALL No. 635.03/C.L.G

D.G.A. 79





THE READER'S DIGEST COMPLETE LIBRARY OF THE GARDEN



THE READER'S DIGEST

COMPLETE LIBRARY

OFTHE

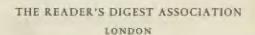
GARDEN 43853

IN THREE WALTINGS

3



635.03 C.L.G



FIRST EDITION THILD REVISE

Published by
THE READER'S DIGEST ASSOCIATION LIMITED
25 BEEKELET SQUARS, LONDON, W.L.

LIBRARY, NEW DELHI.

Ace. No. 43853

Date 7:12:1965

Oct. No. 635.03 | C. 1.9.

CONTENTS

Volume 1

PREFACE	page 1
TODAY'S GARDEN	14
HOW PLANTS LIVE	46
THE SOIL	76
GENERAL SOIL OPERATIONS	93
DRAINAGE	98
FERTILIZERS AND MANURES	101
COMPOSTING AND GREEN MANURING	111
PROPAGATION	116
ANNUALS	144
BIENNIALS	169
HARDY PERENNIALS	174
CHRYSANTHEMUMS	221
DAHLIAS	238
ROSES	252
SWEET PEAS	273
ALPINES FOR THE ROCK GARDEN	279
ROCK GARDEN CONSTRUCTION	296
BUIBS	304
LILIES	321
GLADIOLI	332
THE LANGUAGE OF PLOWERS	340
PLANT DISEASES	347
GARDEN FESTS	380
GARDEN WEEDS AND THEIR CONTROL	411
CALENDAR OF WORK	425

CONTENTS

Volume 2

THE WATER GARDEN	paga 456
PRINCIPLES OF PRUNING	485
SHRUBS AND TREES	492
RHODODENDRONS AND AZALEAS	532
CLIMBERS AND OTHER WALL PLANTS	539
HEDGES	548
FOLIAGE	561
FERNS	580
ORNAMENTAL GRASSES	589
LAWN MAKING AND MAINTENANCE	594
LAWNS FOR RECREATION	609
CACTI AND SUCCULENTS	614
HOUSEPLANTS	632
INDOOR GARDENING	667
FRUIT	680
HOME WINE-MAKING	823
PRESERVING	832
HERBS	858

CONTENTS

Volume 3

THE USE OF GLASS IN THE GARDEN	page 880
ELECTRICITY IN THE GARDEN	913
ORCHIDS IN THE GREENHOUSE	920
CARNATIONS	929
FLOWERARRANGEMENT	942
VEGETABLES	968
EXHIBITING	1062
CHILDREN'S GARDENS	1074
PLANTS OF THE BIBLE	1088
TOWN GARDENS	1094
GARDEN CONSTRUCTION	1116
ANIMALS, BIRDS AND INSECTS IN THE GARDEN	1158
NOTES ON GARDEN LAW	1194
NATURE CALENDAR	1201
THE GARDEN DURING SUMMER HOLIDAYS	1217
LATIN NAMES AND THEIR MEANINGS	1218
GLOSSARY	1224
BIBLIOGRAPHY	1226
INDEX	1228



A corner of a well-stocked plant house in the early summer. All these plants can be taken into the house to provide decoration, and later can be returned to the greenhouse

The Use of Glass in the Garden

GERANDUMS.

SAUNTEAULIA

THE GREENHOUSE

GREENHOUSE, however small, opens Aup new vistas and offers the gardener endless possibilities and delights. In a greenhouse, whatever the weather, even the more tender plants are well protected, and pot plants and bedding plants will flourish. It is possible to pick tomatoes and cucumbers at a time when they are expensive to buy, while other vegetables that are started in the greenhouse, such as cauliflowers, onions and leeks, will produce a heavier yield when planted out-of-doors later on. Alpine flowers in winter, carnations or cacti and succulents are but a few of the choices open to the greenhouse owner.

Never erect a greenhouse without the

approval of the local authority and, if a tenant, the landlord. If a greenhouse is built against the wall of a house, the local council may insist that the base be built of bricks on a suitable foundation, and that the structure does not interfere with the external ventilation of a living-room. If the greenhouse seems likely to increase the rental value of the property, there will probably be a small additional rate assessment.

TYPES OF GREENHOUSE

There are four principal types of greenhouse: the span-roofed, the lean-to, the three-quarter span and the Dutch light.

The span-roofed house is ideal, for it



SPAN ROOF HOUSE

This free-standing building is the best type of greenhouse—where there is sufficient space for it. As light enters from both sides, plants tend to grow more standily and without the tendency to "draw" to one side

can be erected in an open position and admits more light than either the lean-to or three-quarter span types. It also lends itself to interior staging, which can be adapted to suit many different types of plant. Staging may be erected on one or both sides to accommodate pot plants, or removed for growing crops in the soil at ground level.

The Dutch light type of house, although unsuitable for staging, also admits the maximum amount of light, and its height particularly assists the cultivation of plants that grow in the ground soil, such as tomatoes in summer and chrysanthemums in writer.

A three-quarter span house is preferable to a lean-to, as it naturally admits more light. A lean-to house should be built against a south wall, so that it receives direct sunshine for most of the day, and it should never be overshadowed by trees or hemmed in by buildings.

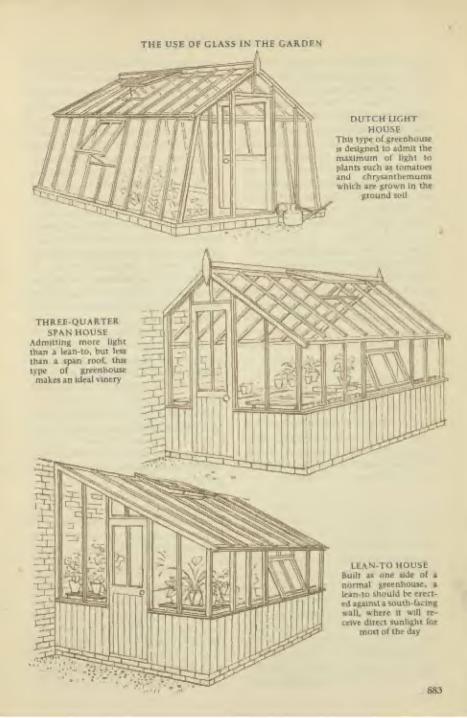
Nothing can compensate for natural sunlight, although it is possible to use special electric lamps to supplement daylight under certain conditions. (See Electricity in the Garden.)

If the greenhouse is to be used mainly during the summer then a north-south setting is the best, but one that is used during the winter months as well will receive the maximum amount of light if placed from east to west.

BUILDING MATERIALS

All greenhouses will last longer if built on a low brick wall laid on a good concrete foundation.

A wall that is too high reduces the amount of sunlight admitted to the house. A 3-ft, wall is generally suitable for span-roofed and three-quarter span greenhouses. For the lean-to type of house an outside wall of 2 ft, is sufficient, the vertical glass framework above being



about 1 ft. high. The sloping sides of the Dutch light house should rest on an even lower wall, about 1 ft. high.

Wood is much used for greenhouse construction, for it retains warmth, and shelving is easily fixed to it.

Cedar wood is extremely durable and need not be painted outside, though if red cedar wood is used, it should be oiled with linseed oil every four or five years. All wood inside the greenhouse should be painted regularly with glossy white lead paint, both as protection and also to reflect light.

Special types of aluminium are also used for greenhouse construction, for it is possible to make the supporting bars narrower and therefore admit more light. Also, metal does not harbour pests. Aluminium, however, does not retain heat as well as wood, nor is it so easy to attach supports for plants to it.

GUTTERS AND WATER TANKS

Provide good guttering all round the greenhouse so that rain water is carried away quickly, either into drains or into a storage tank, with an overflow to a drain. Water tanks are best kept outside the greenhouse, for they are apt to become contaminated if kept inside.

HEATING

Before building a greenhouse, it is important to decide which of the many different methods of heating is to be installed, although heating is unnecessary if the house is to be used only for raising annuals, such as sweet peas, for planting out in the spring. The most common is a boiler for heating water, which then circulates through pipes built underneath the staging round three sides of the greenhouse. The water will remain hot for a long time, and is said to create a better climate for plants than dry electric

heat. Take the advice of engineers when installing hot-water pipes, to ensure a correct flow of water and to make the best use of the space. Four-inch pipes are usually considered the most efficient.

Only a full-time gardener should use a boiler that burns coke, Phurnache or anthracite, for it needs stoking regularly night and morning, and sometimes in the middle of the day as well. The magazine-type boiler requires less attention, because the fuel trickles down automatically, and the draught regulator can be fitted with thermostatic control, This also applies to the automatic gas boiler, which should, however, be installed with the assistance of the local gas company, to be sure that no gas fumes escape into the greenhouse.

Oil heating is effective, and an oil burner can be fitted into an existing solid fuel boiler. It is advisable to discuss the installation of such a burner with an oil-heating firm. The water in the pipes may also be heated with electricity, by using an immersion heater.

The panel type of electric heater is both neat and efficient, and has a water trough incorporated above it. Alternatively, tubular electric heaters may be fixed beneath the staging. In a small greenhouse it is also possible to use a convector heater. (See also Electricity in the Garden.)

Do not be tempted to use paraffin oil heaters, except in an emergency, as fumes can damage plants,

CONSERVATION OF HEAT

The larger the greenhouse, the easier it will be to maintain a healthy temperature. Also, a large greenhouse can be divided into two parts, one of which, the stove house, will have a temperature of about 60° F. (16° C.), while the other part remains a cool house, with a temperature of 45 to 50° F. (7 to 10° C.).

Try to maintain a steady temperature, but do not be unduly worried by a rise in temperature caused by the sun alone. A rise of 15° F. (5° C.) due to the sun may do no harm, whereas a rise of 8° F. (4° C.) from artificial heating can cause considerable damage.

It is very important to conserve heat in a greenhouse, but extremely difficult to insulate the panes of glass without reducing the amount of light.

The best form of insulation is a translucent plastic material such as Thermoplus (polythene), which may be fastened with drawing pins or adhesive tape to the roof bars inside the glass, leaving a gap of at least 1 in, between the plastic and the glass pane. Heat is conserved by this layer of static air, and it is even possible to increase the temperature by as much as 10° F. (6° C.). To maintain a normal temperature, about 40 per cent less fuel will be required. However, this method does cut down the amount of light reaching the plants.

Dripping water from condensation may cause damage to plants underneath; it can be avoided by using a special plastic sheeting which channels the water to the outside edges of the sheets, to run away safely.

Another method of conserving heat is to use an outside blind made of hessian, treated with green Cuprinol to prevent it from rotting. Fix the blind to the top of the house so that it can be rolled down in the evening when the sun has gone down, and rolled up again as early as possible in the morning.

Even a 9-in,-thick brick wall will allow a great deal of heat to escape. Seal all cracks and crevices in the woodwork, glass or brickwork with a special mastic preparation such as Seelastic, which can be applied with a special Expandite gun. Sylglas adhesive glazing tape used on the outside bars acts as an efficient seal, and also as a protection if the greenhouse is built of wood. Two or three coats of thick white paint on the inside walls will seal any cracks in the brickwork. This treatment not only conserves heat, but also prevents insect pests from hiding in the mortar between the bricks, and increases reflected light.

It is inadvisable to seal permanently the slight gap that is usually found along the line of the eaves, between the top rails and the glass. This gap provides for the escape of condensed moisture, which can harm plants in cold weather, when the atmosphere in the greenhouse needs to be kept dry. However, if continuous icy blasts should find their way in on a cold night, block the gap temporarily with strips of sodden newspaper.

Rubberslaps nailed to the bottom of the inner side of the door will help to make the greenhouse airtight; on frosty nights, lay a strip of sacking outside the door.

Always put the main door of a greenhouse on the more sheltered side, as a protection against draughts and wind.

VENTILATION

Plants need fresh air as well as warmth, and all free-standing greenhouses should have a ventilator on each side of the roof. A lean-to house should have ventilators at each end of the roof. Generally, a ventilator should be 4 ft. wide and 2 ft, deep for every 8 ft. of greenhouse. When growing tomatoes, it is an advantage to have ventilators at the ends of the house as well, so that the air can move constantly and there is no danger of the atmosphere becoming stagnant and causing tomato mould disease.

Most ventilators are worked by hand, It is also possible to install automatic ventilators, which operate on a thermostat and open and close according to the heat in the house. Certain firms specialize in automatic ventilation. The movement of air in a greenhouse is influenced by the position of the sun and the direction of the wind, but generally the hot air rises and flows out of the top ventilators, and cold air enters to take its place. Open the ventilators early in the morning if a rise in temperature is expected; close them partially in the afternoon, and close them fully when the sun goes down, in order to trap the remaining heat of the sun and save fuel. In midsummer it may be necessary to keep the ventilators open all night.

Although ventilators may be opened suddenly, a fully opened ventilator should not be closed suddenly because of the possibility of excessive condensation. On a damp, dull day, when the air in the greenhouse tends to be sluggish, use more heat to encourage the air to circulate, and give a certain amount of ventilation, even if the temperature outside is fairly low. Never open ventilators on the windward side, during high winds, for fear of draughts.

SHADING

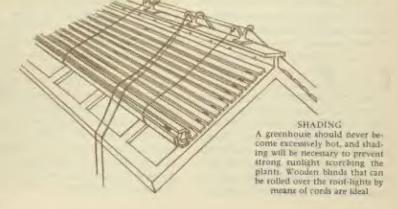
Blinds, already mentioned as a means of conserving heat at night, are even more important to prevent strong sunshine scorching the leaves of plants, and to keep the temperature of the greenhouse within reasonable limits on a hot, sunny day. Never allow a greenhouse to become excessively hot, for the plants will be unable to "pump" enough moisture into their leaves to keep cool, and will suffer in consequence.

The best type of blind is that made of very thin but hard wooden laths \(\frac{1}{4}\) in, wide. These are linked by metal clips so that a gap of \(\frac{1}{4}\) in, is left between each lath. Fix the blinds to the outside of the roof at the top so that they can be rolled up and down quickly by means of pulleys and cords. If ventilation is needed at the same time as shading, cut away the laths over the roof ventilators and attach the cut-out pieces to the ventilating sashes. Some firms provide wooden lath blinds with the greenhouse.

Another means of shading in summer is to spray the outside of the greenhouse with a special distemper-like solution, a light lime wash or, most adhesive of all, a thin flour paste. The disadvantage of spraying is that if the weather changes, it is difficult to remove the shading quickly to let in the sunlight, and it is also a fairly arduous task to wash it off for the winter.

STAGING

If it is intended to grow pot plants or raise seeds in boxes, the greenhouse



should be equipped with either permanent or temporary staging at a convenient height, usually about 3 ft. above ground level. Staging is usually made of aluminium, or of the same wood as the frame of the greenhouse. In the latter case, it should be painted with at least three coats of good white lead paint.

Fit sheets of corrugated iron or asbestos over the staging, and cover the sheets with washed gravel, pea shingle or large breeze, to ensure good drainage and to allow for aeration. Stand the pots and boxes on the shingle, which should be raked smooth and level from time to time, and always kept free from moss and algae.

If the staging is to be temporary, slatted bars resting on legs like those of a table usually replace the corrugated iron. The entire staging can then easily be removed at the end of the propagating season, and plants can be grown in the ground soil.

PROPAGATING EQUIPMENT

A simple propagating box with a glass or polythene top can be placed on the staging near the boiler. The front of the box should be about 6 in. deep, and the back about 7 in., so that the glass slopes. Place the box so that it faces south, and fill it to within about 1 in. of the glass with a mixture of coarse silver sand and very fine peat, which should be carefully levelled.

Electrically heated frames are also available, the rising heat providing ideal conditions for rooting cuttings easily. (See Propagation.)

POTS AND POTTING COMPOSTS

A recent development of great importance to the gardener is the production of pots of various types of plastic, which have several advantages over the clay pot. The principal materials used are extruded polystyrene and Alkathene, which are easy to clean, and can therefore be sterilized or thoroughly cleaned at the end of each season. These pots are extremely light, and fit neatly into each other, so that large numbers can easily be stored or moved from place to place. They are also virtually unbreakable.

A plastic pot retains moisture better than a clay pot, and the extruded polystyrene also holds the warmth of the greenhouse or room, thus raising the temperature of the soil slightly and promoting better root action. Polythene pots are produced in a range of gay colours, and although a little more expensive than clay pots, they will last much longer.

The type of soil in which a greenhouse plant is potted is of great importance. The simplest and most efficient compost for raising seeds in either boxes or pots is the John Innes seed compost. This consists of two parts good sterilized loam, one part peat and one part coarse sand (all parts by bulk). Add to each bushel of this mixture 1½ oz. superphosphate of lime and ½ oz. ground chalk.

When the seedlings are large enough to be repotted, one of a number of John lanes potting composts is used. The standard mixture consists of seven parts fibrous loam, three parts peat and two parts coarse silver sand (all parts by bulk), with the addition of fertilizer: 4 oz. John Innes base and 2 oz. ground chalk or limestone per bushel. The John Innes base is composed of two parts hoof and horn meal, two parts superphosphate of lime and one part sulphate of potash (all parts by weight), and can be obtained already mixed from horticultural sundriesmen. The total mixture is known as John Innes potting compost No. 1.

Some plants, particularly at the second or third potting, need a stronger compost than this, and should be given John Innes potting compost No. 2, which simply indicates that double the quantity of fertilizer (8 oz. base and 1½ oz. chalk) is used per bushel. The even stronger John Innes potting compost No. 3 contains three times the amount of fertilizer per bushel.

Instead of the John Innes potting composts, an Eclipse No-Soil compost may be used. This can be bought ready made up, and only needs the addition of the special plant foods that are provided in a separate plastic bag, and which should be used in accordance with the directions on the packet.

WATERING AND DAMPING DOWN

Damage can be caused both by underwatering and by over-watering plants under glass. Never give little sprinklings of water, but do the work thoroughly. Water in the evening during the summer and at about 10 a.m. in winter, using rainwater when possible, particularly in districts where the tap-water is hard. Syringeing the plants and watering the paths and walls in summer, a process known as damping down, creates a good moist atmosphere and provides a kind of natural dew, thus preventing the plants from transpiring too much. Do not damp down in winter, except in warmer greenhouses, and be careful not to spray inactive or hairy-leaved plants, or those in full flower.

If the ground soil in the greenhouse is used for growing crops, the drainage should be perfect. Water does not drain as easily in a greenhouse as in the open, and the soil should never be allowed to become stagnant.

HYGIENE

The greenhouse should be kept perfectly clean. Regularly pick off and burn dead flowers and leaves, and never allow moss and algae to accumulate on the top of the compost in pots. Scrub and white-

wash the inside walls of the greenhouse once a year, and clean the outside of the glass thoroughly in late September or early October. Paint wooden greenhouses with a genuine white lead paint at least once every three years.

FUMIGATION

Greenhouse pests and diseases can be controlled by fumigation, a process usually known as "smoking". Pesticidal smokes control all insect pests, while fungicidal smokes prevent fungus diseases such as botrytis and mildew.

Smoke bombs are available in various sizes, and produce a clean cloud of microscopic particles of insecticide or fungicide, which fills every crevice and covers every surface of the greenhouse. If the correct bomb is used, the smoke cannot taint food or harm crops. (See the section on greenhouse pests in Garden Pests.)

Use smoke bombs in calm, warm weather, but never in bright sunshine. First work out the cubic capacity of the greenhouse, as shown in the diagram, and use one small pellet smoke bomb for every 500 cubic ft., or one cone smoke bomb for every 600 cubic ft.

Make the greenhouse as smoke-tight as possible. Just before closing down for the night, light the first bomb at the far end of the house and others at intervals while moving back towards the door. As soon as the last bomb has been lighted, shut the door firmly, and keep it closed overnight. Be sure to put up a warning notice outside: "Do not enter; house being fumigated".

Further bombs may be lighted once a month as a preventive measure, and if infection should occur, light bombs once a fortnight until the trouble is controlled.

When using fungicidal smokes, furnigate 24 hours before planting, so that all fungus spores are killed.

FRAMES AND CLOCHES

Like a greenhouse, "cold glass", in the form of frames or cloches, makes it possible to grow plants out of season. Seeds germinate better under glass when weather conditions are unfavourable, and the less hardy plants can be protected and kept warm.

Cloches, being portable, are perhaps easier to manage than frames. However, frames preserve warmth more effectively, and so enable a wider range of plants to be grown.

FRAMES

The three types of frame most commonly used are the wire sectional frame, the permanent frame, which can be heated, and the type covered by Dutch lights. Movable frames have sides made of wood, the sides of the permanent type of frame being made of brick or concrete. Frames are generally 24 ft. high at the back, and 2 ft. high in front; a back wall that is too high will throw too much shade, and will also make it difficult to keep a level bed in which every plant lies at the same distance from the glass. The light covering the frame is usually 3 ft. wide and 5 ft. deep.

A cold frame should always face south and should be provided with a hessian blind for protection in winter, and sometimes from direct sun in midsummer.

Take great care when watering plants grown in frames, because there is little space between the soil and the glass and the atmosphere can therefore quickly become saturated.

Never water in cold, frosty weather, and keep the soil fairly dry. In midsummer, however, when it is sunny and hot, remove the lights completely to prevent the air drying out, and then water as necessary. WIRE SECTIONAL FRAME

The best portable frame is the sectional wire frame, or ganwick, sometimes known as a flat-topped cloche. As well as being easy to move, these cold frames are convenient in that they allow both rain and the maximum amount of light to reach the plants; they have automatic ventilation; and they are inexpensive.

The best type of sectional frame is known as the Double 18, which is 1½ ft. high and can be assembled in any length. The average vegetable garden will accommodate three rows of these frames, each 10 ft. long. The crops can easily be reached if the single square of glass that covers each section of the frame is removed.

If three frames are used, the first could hold lettuces from October to January and could then be moved to a new site for marrows. Remove the top panes of glass in June, and the plants will continue to crop until October when the frame is needed for lettuces again.

The second frame could take radishes from October to January, and could then cover lettuces, on a new site, until April. These could be replaced by tomato plants, set out 1 ft. apart and trained along a stout stake running almost horizontally, which will crop between July and the end of September, when the sectional frame should be moved again in preparation for a new sowing of radishes.

The third frame could be used for raising such vegetables as cauliflowers (sown in September), Brussels sprouts, leeks, lettuces and onions (all sown in January). All these vegetables should be planted out-of-doors in March. Then move the frame to accommodate runner beans down the centre and dwarf french

	October - January	Fabruary - May	June - September
FIRST FRAME	RST FRAME Lettucas Mercons		
	October - January	February - April	May - September
SECOND FRAME:	Radishes	Luttuces	Tomatues
	Jenuary - March	April - June	July - September
THISO FRAME	Brussets Sprouts Leeks/On-ons	Beans	Cucumpers

HOW TO USE THREE MOVABLE FRAMES

beans on either side—sow a dwarf variety of runner bean, like Hammond's Dwarf. Scarlet, or remove the frame when the beans need the extra height. In June, when these no longer need cover, move the frame again to cover six cucumber plants, which will yield a heavy crop later in the summer.

THE PERMANENT FRAME

A permanent cold frame is built with brick or concrete sides, and is used for raising seedlings of all kinds, as well as for rooting cuttings that require only slight protection. Tender plants that have been raised from seed in the greenhouse will harden well if moved to the cold frame in April, before finally being planted out in the garden in late May or early June.

Use the cold frame also to protect tender herbaceous plants during the winter, or to grow early crops of carrots and radishes.

Pot plants that have finished blooming in the greenhouse may be rested in a cold frame during the summer.

A permanent frame may be heated with hot-water pipes, or by electricity, In which case special wires generally run through the soil. A heated frame is extremely useful for raising plants of all kinds, for early salad crops, and for such crops as cucumbers and melons, which need heat if they are to be produced early.

THE DUTCH LIGHT FRAME

The Dutch light frame has as a foundation a simple wooden box framework, is in high at the back and 9 in, high in the front. The most convenient size of frame will accommodate three separate Dutch lights on wooden frames, which should fit snugly into the box frame. A Dutch light is a simple wooden framework with sides grooved to receive a single sheet of 24-oz, glass, 4 ft. 3 in, by 2 ft. 4) in. To prevent the lights from being blown off, secure them with wires nailed to the frame. Treat the wood of the framework with Cuprinol, but never with creosote, which may damage the plants.

The soil under the Dutch lights should be rich in organic matter, and it is advisable to fork into each frame 14 bushels of fine peat and t lb. of fish manure with a 6 per cent potash content. When the soil

	January - March	April	May June	July - August	Seplember
1	Listroces	Lettices	Lettuces	LeSuces	
2		Pess	Pean	Press	
3			Separ Corn	Sweet Com	
4				Cucumbers	
5			Tomatoes	Tomátoco	Tarreloes

FIVE-STRIP SYSTEM FOR CLOCHES OR GANWICKS
Lay the cloches out close together in a row and move them 2 ft. at a time

has been prepared, place the glass over the frame to warm the soil before sowing.

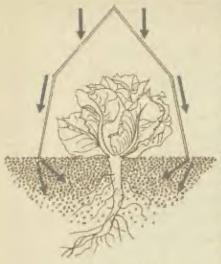
Place Dutch light frames in a sheltered spot where they will receive unobstructed light. They are not, of course, automatically ventilated, so use wooden blocks to raise the frame lights at the bottom or at the top, depending on the direction of the wind. Open the frames at 9 or 10 o'clock in the morning, depending on the time of year, and close them when the sun sinks. Never ventilate when rain might drive in, or when there is fog or frost, After a sharp night frost, however, open the lights at the bottom so that some air enters before the sun gets strong enough to cause a sudden thaw, which may damage the plants.

A triple Dutch light frame might be used as follows: one light for lettuce from late September until December, followed by radishes until April; the other two lights could hold carrots from October until April, From April until the end of September all three lights could be used for dwarf tomatoes.

Alternatively, dwarf beans would grow from September to November, followed by lettuce and cauliflower until late April. From May till September, one light could be devoted to melons, and the other two to cucumbers.

CLOCHES

Like the sectional wire frame, cloches are portable. Since it is usually convenient



MOISTURE FOR ROOTS

A clocke is designed to form a watershed so that the rain falls away from the collar of the plant yet reaches the roots

to move them no more than about 2 ft, at a time, they are best laid out, as close together as possible, in a long straight row and moved according to a strip system. The cloches can then be in use for the whole of the year. The five-strip system is particularly successful, and is arranged as follows: 1. lettuces; 2. peas; 3. sweet corn; 4. cucumbers; 5. ripening tomatoes; 6. lettuces again, and so on. In April, move the cloches from strip 1 to strip 2 so that the lettuces, planted in

October, remain in the open. A month later move the cloches on to strip 3 to cover the sweet corn, leaving the peas in the open. By the end of June the sweet corn will no longer need protection, and the cucumbers can therefore be covered from July to August. By then the tomatoes that have been growing in the open since June will need help in ripening off. After cutting them from their stakes, cover them with the cloches from the cucumbers. When the tomatoes have been picked, in mid-October, the cloches are again free for newly sown lettuces.

Rows of cloches can also be used for raising flowering annuals, which are usually sown in February, March and September. September sowing is particularly satisfactory, for the cloches can be removed early in April and used for other crops, such as half-hardy annuals, which are sown at that time, on the spot where the plants are to flower. Perennials that come true from seed are usually sown under cloches in mid-March. If bulbs are to be bought into flower early, plant them out-of-doors at the normal time, and place cloches over them in November. Violets can be covered with cloches from October until the middle of March. A fortnight before planting gladiolus corms, usually about the beginning of March, put the cloches into position to warm the soil. Keep them on after planting and remove them when the gladiolus spikes touch the glass.

PLASTICS IN THE GARDEN

GLASS VERSUS PLASTICS

Despite some small loss due to reflection and absorption, glass transmits all the light that plants need. It is easily cleaned, is durable, and any water on it escapes quickly. On the other hand, it is fragile and needs a rigid structure to support it. Glass is extremely efficient in conserving heat, whereas polythene, being less transparent, is highly susceptible to all forms of radiation, both hot and cold. The temperature under polythene can actually be lower than in the open, and is usually 10° F. (5° C.) or lower than that in a glass greenhouse. However, the thicker transparent plastics, such as PVC, rival glass in their efficiency, and are extremely versatile.

GREENHOUSES, FRAMES AND CLOCHES

Inexpensive greenhouses, frames and cloches can be constructed of plastic or polythene, which for outside covering should have a gauge of at least 500. The material is light, and only a simple and reasonably light wooden framework is needed. The plastic is held between strips of wood, which can be screwed down after the plastic has been stretched taut, making it possible to construct greenhouses and frames of various sizes.

Although plastic loses heat quickly at night, it does enable the gardener to raise plants in early spring, and to produce early crops of such summer vegetables as tomatoes and cucumbers. Condensation may however be extremely heavy unless the house or frame has plenty of ventilation and a reasonable amount of heat. Since plastic and polythene do not last much more than 18 months or two years, depending on weather conditions and the position of the structure, it is usually uneconomical to use these materials for large greenhouses.

Plastic is particularly valuable in the construction of cloches, when it can be mounted on a simple wire or wooden framework. These structures are very light, and should be well anchored into the ground to prevent them from being blown away or disturbed.

FLASTIC SHEETING

Polythene sheeting is extremely useful for protecting plants from rain, and it also makes an excellent lining for a glass greenhouse, as a means of conserving heat. In this case, thin material of 50 or 150 gauge should be used. (See Conservation of heat.)

Sheets of green polythene can be used to shade the greenhouse, and can either be attached inside the house or purchased as ready-made roller blinds.

PLANTS UNDER GLASS

CUCUMBERS

VENTILATION, HEAT AND SHADE

The best greenhouse for cucumbers is 15 ft. wide, with a 3-ft. gap between the staging and the roof. Ventilate the house with extreme caution, and close the ventilators quite early in the afternoon. About July a little extra ventilation may be given on the sheltered side to change the air in the house.

Never allow the atmosphere of the cucumber house to become dry, and maintain at all seasons a night temperature of 65° F. (18° C.), which in the day-time may rise as high as 90° F. (32° C.). Syringe the plants frequently, and damp down the walls and paths of the green-

house, especially during the hot weather. Give the plants a feed of diluted liquid manure once a week.

When the sun becomes bright and scorehing during the summer months, shade the greenhouse with a blind over the outside of the glass.

SOWING

Cucumber seeds are sown in February or March in 3-in. pots, in a compost of three parts loam and one part peat. The bottom of the pot should be well crocked and filled to a depth of 1 in. with rough peat. Place one seed point downward 1 in. deep in the centre of each pot, cover, and water well. Place the pots on a shelf that has heating close below it.

LEPOTTING

After a fortnight the small plants should be planted out in their beds, but if these are not yet ready, or if the plants are ultimately to be planted out in the garden, report he cucumbers in 5-in. pots, using a similar compost, but with twice as much peat. The cucumber is one of the few plants that should not be potted firmly. Insert each plant right up to the seed leaf, and again water well. Thereafter, water only when the soil appears dry, for the roots will not develop well in continually wet soil,

After a week the plants will need support; push into the soil a piece of fine bamboo 1½ ft. long, and tie the stem to it loosely in order to allow for growth.

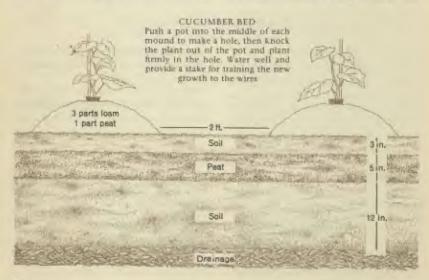
MAKING UP THE BED

At least two weeks before planting out, make a bed 1½ ft, wide at the base and 1 ft, wide at the top, Be sure that there is good drainage, for water must be able to escape quickly. Use any open-textured organic material for the base of the bed; baled straw makes a good border. Over the

base lay 1 ft. of soil, followed by peat, which should always be kept slightly moist. A further 3 in. of sterilized soil may be placed over the peat. On the surface of the bed, build mounds of a good rich compost, three parts loam, one part peat. These should be moderately firm, about 2 ft. apart, and so arranged that drips from the rafters will fall between them. Warm the soil for a week before putting in the young plants.

PLANTING OUT

At the end of May, when all fear of frosts is past, the young cucumbers may be planted out-of-doors. If they are to continue growing in the greenhouse, transfer them from their 3-in. or 5-in. pots to their permanent bed when they are 6 in. tall. Immerse a pot in the middle of each mound to make a hole the size and shape of the ball of soil in the pot. Then knock the plant out of the pot and plant it firmly in the hole. The top of the plant ball should be slightly above the surface of the bed. Water well, giving 1 gal, to every three mounds, and provide a stake



THE USE OF GLASS IN THE GARDEN

for training the new growth to the wires of the house.

STOPPING AND TYING

Cucumbers should be trained up wires stretched the length of the greenhouse, 6 in. apart. Pinch back each plant when it reaches the fifth wire; this enables the lower fruit to swell more quickly. Do not allow any cucumbers to grow on the main stem. Stop the main laterals at the second leaf joint, and the sub-laterals at the first joint, keeping two fruit-bearing joints on each lateral. Remove all male flowers. Tie all growths to the wires loosely, to allow for growth. All fruit should hang well clear of ties and wires.

WATER AND MULCH

Soak the bed thoroughly twice a week with water of the same temperature as the greenhouse, if a water barrow is left in the greenhouse for 24 hours, the water will heat naturally.

It is essential to mulch cucumbers regularly with soil and peat mixed in equal parts. Leave the soil in the greenhouse for at least 12 hours before it is needed. Give the first top dressing about ten days after planting, and a second one as soon as the white root fibres appear on the surface of the soil. Use only a small quantity of mulch each time.

VARIETIES

The following varieties are recommended for cultivation in the greenhouse:

Butcher's Disease Resister, a heavy cropper and popular because of its immunity from spot disease.

Excelsior Telegraph, a long, smooth variety that yields a heavy crop.

GRAPES

Grapes can be cultivated in the most simple greenhouses, as long as the structure faces south to make use of the maximum amount of sun. The lean-totype of greenhouse is ideal.



CUCUMBER FLOWERS

The male flower has a thin stalk; the female flower has an immature cucumber behind it. Puk off the male flowers as they appear

TEMPERATURE

If vines are to be grown in the same greenhouse as other plants, the latter should include only those that grow outdoors in summer and require little heat in winter, for vines, certainly at the beginning of their lives, should not be subjected to very high temperatures.

Different varieties of grape require rather different temperatures, but in general the temperature in January should be restricted to a range of 50 to 55° F. (10 to 15° C.). In March the minimum temperature should be raised to 55° F. (13° C.), and from April onward the day temperature should be 70 to 75° F. (21 to 24° C.), dropping to 55° F. (13° C.) at night. When the vines are in bloom the night temperature should not be less than 60° F. (16° C.), although Muscats



BUTCHER'S DISEASE RESISTER

This cucumber has been developed to resist cucumber spot disease. If the disease is prevalent, this is the variety to grow since there is no known control for the disease

will need a temperature of 70° F. (21° C.).

Once the grapes have coloured, reduce
the heat to the minimum. During the
winter, after the grapes have been picked,
the vines will not be harmed if they are
exposed to frost.

VENTILATION

A buoyant atmosphere is essential for vines. Give generous ventilation at all times, and increase ventilation if the temperature rises. Moisture is also necessary, which means that the soil should always be damp. Spray the leaves of the vines occasionally, and damp down the floor and walls of the greenhouse in hot weather.

SOIL

Although vines are not particular about soil, they require excellent drainage, so always guard against the possibility of stagnant water collecting in the borders. A clay sub-soil is ideal for vines. The border should be up to 10 ft, wide, but since this is seldom possible in a small greenhouse, it is advisable to arrange for the roots of the vine to find their way under the walls of the greenhouse and into a well-prepared border outside. A turfy loam, with the addition of some stable manure and a few broken bricks, makes a suitable soil.

PEANTING

Although vines can be propagated from buds or cuttings, the beginner is advised to buy prepared canes in pots. Wash the roots free from soil so that they can easily be spread out in the new bed, trim the canes back to about 14 ft., and plant them in January, 3 to 4 ft. apart. Be sure to fill in plenty of soil among the roots, and tread the plants in well.

WATERING

Apart from keeping the soil evenly moist at all times, vines need thorough watering during specific periods of their development. Water well when the vine is starting to grow vigorously, just before flowering, when the fruit is setting and again when it is swelling, and finally after the grapes have been harvested.

TRAINING AND FRUNING

Training and pruning a vine is an extremely important operation, but is not difficult. During the first year, the vine will bear no grapes, and only the main shoot should be allowed to grow to its full length. Stop side shoots when they reach 2 ft., and cut them back completely when pruning in the winter.

A few bunches of grapes may be produced during the second year, for the side shoots are now allowed to develop naturally. In the winter, however, prune them back to one bud from the main stem, leaving the most vigorous spur. The main shoot, too, should be pruned

back to the hard, ripe wood, probably about 6 to 8 ft. from the ground. As it needs support tie the vine to wires stretched the length of the house 1 ft. from the glass walls or roof. Gently bend down the laterals before they touch the glass, and tie these to the wires too. Make sure that they are evenly distributed over the available space and receive the maximum amount of light and air.

In the third year, the vine will produce a full crop of grapes, and should continue to yield fruit for many years. Restrict each lateral by nipping it off at two leaves beyond the first bunch of grapes. After the fruit has been harvested, cut each lateral to half its length, and in the winter, prune to one bud from the main stem. The main shoot, too, should now be stopped at the top wire of the house, to encourage fruit-bearing shoots to break lower down.

If only one vine is grown in the greenhouse, keep two main shoots during the first year, and train them horizontally in opposite directions. The laterals that grow from the upper sides of these shoots should be trained vertically. The subsequent treatment is the same as that described above.

THINNING

Never allow more than one bunch of grapes to develop on each lateral, and remove any others as soon as possible. As a general rule, each foot of well-matured vine should carry no more than 1 lb. of fruit. It may therefore become necessary to carry out further thinning.

In the case of some heavy-berried vines, the top two or three bunches may need to be supported by looping raffia to the wires.

A good bunch of grapes has a compact appearance, and should not be allowed to become too long or straggling. The individual grapes in a bunch may therefore need thinning, particularly at the centre, otherwise those grapes will become flattened. Never touch the fruit by hand, but hold the bunch steady with a short, forked stick and use special grapethinning scissors.

VARIETIES

The following varieties are recommended for cultivation under glass:

Black

Black Hamburgh, May to November; very productive, excellent flavour.

Lady Downes, December; keeps well.

White

Cannon Hall Muscat, December; good flavour.

Muscat of Alexandria, May to December; excellent flavour.

MELONS

Melons can be grown either in the greenhouse or in frames, but the ideal conditions for their cultivation can best be achieved in a greenhouse. They require rather similar treatment to cucumbers, to which they are related, but it is important to remember that, after the earliest stages, melons like a drier atmosphere than cucumbers.

SOWING IN POTS

A good fibrous loam is essential for melons, and it is therefore advisable to add one part leaf mould and sand to three parts loam; the addition of a few smashed crocks will also be beneficial. In March, sow the melon seed about \(\frac{1}{2}\) in deep in individual small pots. Water well, particularly if the weather is hot, and plunge the pots up to their rims in moist peat to encourage germination. Keep the peat moist and provide plenty of light. Do not let the night temperature fall below 65° F. (18° C.) at this stage.

POTTING ON

It is important that the young melon plants should not become starved, and they should therefore be potted on into 5-in. pots before they have completely filled the smaller pots with roots. The temperature may now be reduced to 60° F. (16° C.) at night, but do not allow it to fall any lower from now on.

FLANTING OUT

A good fibrous loam is the best soil for the planting bed, as for the pots. Make up the bed with small mounds, as for cucumbers, and plant in the same way. Do not ram down the soil too firmly, however, and do not leave a depression for water at the top of each mound. The soil round the base of melon stems should never be allowed to be too moist.

TRAINING AND STOFFING

Provide wires for training melons in the same way as for cucumbers. Stake and tie the plants as this becomes necessary. Train melons up canes until they reach the top wires of the greenhouse; only then should the tips be pinched out. Side shoots will then soon appear, which in turn will bear male and female flowers.

FERTILIZATION

Unlike cucumbers, melons must be fertilized if they are to produce fruit. Wait until about six female flowers have appeared on each plant; these can be identified by the tiny embryo melon at the base of the flower. Break off the petals of the same number of male flowers without disturbing the pollen, and place each one over a female flower, so that the stigmas receive the pollen. This operation is best carried out at about midday, when the female flowers are most receptive. The melons will swell quickly after fertilization, but do not allow more than three or four fruits to develop on one plant, and not more than one on each side shoot.

WATERING AND FEEDING

Keep the soil fairly dry during the period of fertilization, but water thoroughly compost, and sow three seeds 4 in. apart and 4 in. deep in the centre of each pot. Place the pots in the frame, and when the seedlings appear, thin them down to one to each pot.

They should then be left in the frame until the end of May, when they should be ready for planting out in the garden.

POTTING UP

After about 28 days the seedlings that are in boxes in the greenhouse should be about 1½ in. high, with two pairs of true leaves. Each seedling should then be potted off into a 3-in. pot, using John Innes potting compost No. 1. Always handle the plants by the leaves, never by the stems.

At the beginning of May plants that are to mature out-of-doors should be placed, in their pots, in cold frames to harden. By the third week of May the glass of the frames may be removed, and the plants should be ready for planting out in the garden at the end of May or early in June.

Plants that are to continue growing in the greenhouse may either be planted out in the border, potted on into larger pots or boxes, or cultivated in rings on beds of aggregate.

PLANTING OUT IN THE BOXDER

The ideal soil for tomatoes grown in the border of the greenhouse is a friable, well-drained, but firm, sandy loam. Dig in 4 oz. of fish manure per sq. yd., and spread 1 lb. of lime per 100 sq. yds. on the surface of the soil. To improve seration in soil that is heavy, or which has held tomatoes for several years, dig straw into the ground, or use a bucketful of coarse peat per sq. yd.

When the young plants are about 5 or 6 in. high, turn them out of their 3-in. pots, carefully keeping the ball of soil intact and removing only the crock. Most varieties can be planted 15 in. apart

in rows that are alternately t ft. 9 in. and 2 ft. 3 in. apart. With proper treatment each plant should yield an average crop of 6 to 8 lb.

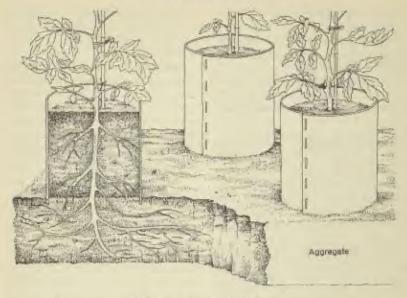
Water the plants in well immediately after planting. Thereafter, a good soaking once or twice a week will generally be sufficient. It is difficult to lay down hard and fast rules, however, and the gardener should be guided by the appearance of his plants as well as by atmospheric conditions. If the leaves flag, it is a sign that water is needed; a light sprinkling of water over the leaves is also beneficial.

Do not be tempted to over-feed with manure during the growing season, as this may result in the dropping of the flowers, watery and insipid flavour, and disease because the plant is soft. Top dressings of peat or straw may be given as a mulch, and a fish fertilizer with a topercent potash content may be applied in July, August and September, using about 2 oz. per sq. yd. Watering with Liquinure (Tomato Special) is also an excellent method of feeding tomatoes in summer; use once a fortnight, following the instructions on the bottle.

GROWING ON IN BOXES OF POTS

Plants that are to mature in boxes or pots should be grown for about three weeks in their 3-in. pots and then transferred to 5-in. pots for a similar period. Meanwhile, fill 10-in. pots or boxes with a compost of two parts good soil to one part peat, filling to within about 4 in. of the top, so that top dressings can be added later. Leave the compost to warm for some time before planting, and then dig a hole large enough to hold intact the ball of soil from the smaller pot, so that the root system is disturbed as little as possible when the plant is moved.

Give a top dressing of 2 to 4 in. of John Innes potting compost No.2 when several trusses of fruit have set. Another dressing may be necessary six weeks later; water



RING CULTURE OF TOMATOES

This method saves labour, promotes steady growth and helps the plants to escape soil-borne diseases. In May set the plants in compost-filled, open-ended rings of roofing felt of lino and place the rings of the apart on moist aggregate.

well after each dressing to settle the soil. Pot plants require more watering and manuring than plants in the border, and it will usually be necessary to water every day, adding a suitable liquid feed to the water twice a week.

KING CULTURE

This method indicates the growing of tomato plants in open-ended pots, which stand on beds of moist aggregate. The plants form their first root system in the pots, where they obtain their food, and a secondary root system in the aggregate, from which they receive moisture. Ring culture is labour saving, and has the added advantages of promoting steady growth, earlier cropping and greater freedom from soil diseases.

To make a bed of aggregate, dig a trough or excavate the floor of the greenhouse to a depth of 6 in. Line the sides of the excavation with slate or polythene to prevent the soil from washing in. In the case of clay soil, which does not drain freely, slope each side of the base of the excavation towards the centre, and give the trough a very slight overall incline. Cover the base with a polythene sheet, and place drain-pipes down the centre, leading to a rubble-filled hole outside the greenhouse. Then fill the trough with aggregate.

The best aggregate is weathered boiler ash, which can be kept moist. Alternatively, use fine weathered clinker or a mixture of three parts 1-in. gravel and one part coarse grade vermiculite.

Wash the aggregate with a 2 per cent formalin solution each year, and close the greenhouse for several days. It should then be ventilated until all the fumes have disappeared. For a double row of tomato plants, make a bed 3 ft. wide, or for a single row, 1 ft. wide, pressing down the aggregate well and then soaking it with water.

Make bottomless pots for the tomato plants from rings of roofing felt or lino 9 in. deep and 9 in. in diameter. The simplest nutrient compost is the John Innes potting compost No. 3, or Eclipse No-Soil compost, a bushel of which will fill five 9-in. pots. Good results can also be obtained from three parts heavy loam and one part peat (both by bulk), adding 12 oz. John Innes base fertilizer and 4 oz. ground chalk.

At the end of April or in May, stand each ring on a slate, and half fill it with compost, pressing this fairly firm with a piece of wood. Set a plant, which should be showing its first truss of flowers, in the ring, and pack compost round it to within 1 in. of the top of the ring. Place the pots on the aggregate, leaving 1½ ft. between each; pack a little aggregate between them.

Keep the aggregate moist by frequent watering, but do not flood it, for the plants should receive only a little water until the first flowers have set, so that roots develop downward into the aggregate before growing in the compost. Water the pots only when the ball of soil dries out, and if they are splashed from the daily watering of the aggregate, it is not necessary to water them separately.

Start feeding with a liquid fertilizer when the first truss of flowers has set and the fruit is beginning to swell.

Frequent feeding gives the best results, and should be confined entirely to the pots. Give about one pint per plant every third or fourth day, and water the aggregate afterwards.

STOPPING AND STAKING

Whichever method is used for growing greenhouse tomatoes, all side shoots

should be pinched out immediately they appear, and dense foliage may be thinned to allow air and sunlight to reach the fruit.

Avoid any ruthless cutting away of the leaves, though any yellowing leaves may be removed.

Stop each plant by pinching out the growing point when it has produced nine or ten trusses of flowers.

All tomato plants need support. Bamboo canes can be used, or lengths of string can be attached to overhead wires strung tightly from one end of the greenhouse to the other, about 6 ft. from the ground. The the other end of each string to the base of a plant, or to a short bamboo cane driven in near its base, and twist the string round the plant as it grows and needs support.

VARIETIES

The following varieties of tornato are recommended for cultivation under glass:

All Clear, a good cropper, fairly resistant to mildew.

E.S.5, a tall, heavy cropping variety, with fruit of excellent quality.

Eurocross, a hybrid which is resistant to tomato mould disease; a heavy early cropper.

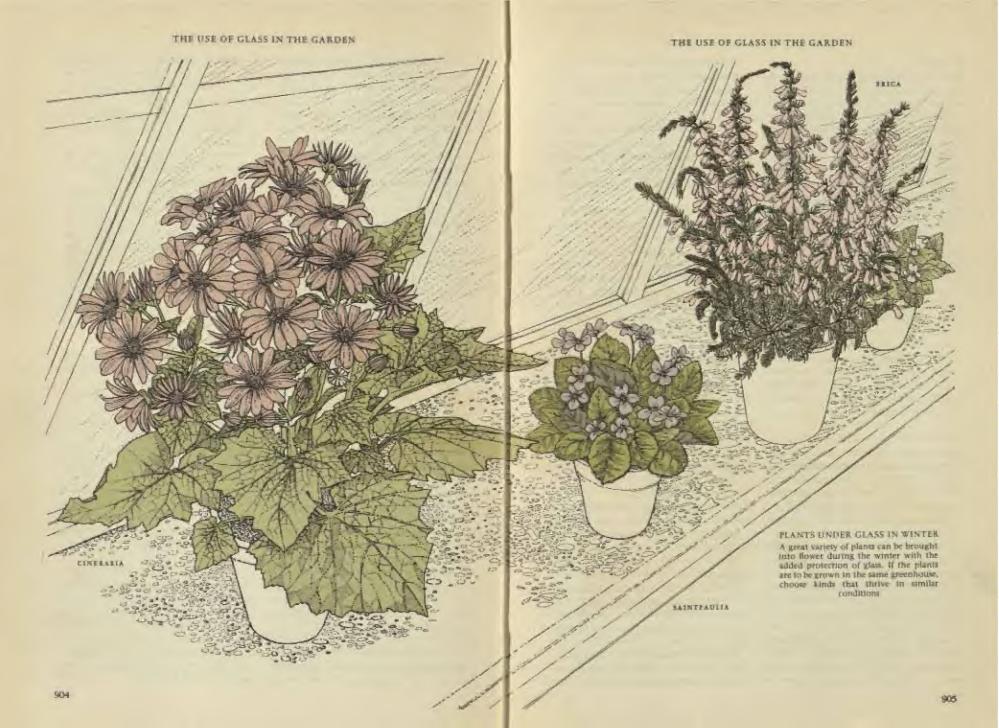
Market King, a heavy cropper, good flavour.

Syston Cross, a free-setting, shortjointed variety, immune from tomato mould disease; easy to grow.

DECORATIVE PLANTS

There are a great many decorative plants that can be grown under glass, but the gardener who has only one greenhouse should choose plants that thrive in similar conditions.

A recommended average temperature is a steady 55° F. (13° C.) in the daytime and 45° F. (7° C.) at night.



WATERING

Plants that have large broad leaves and are quick growing often require water every day, while plants that grow slowly or have thick leathery leaves may not need watering more than once a week. Plants that are growing fast and are healthy need more water than sickly plants, or those that have been cut back or are starting to flower. A plant growing in a peaty compost requires less water than one in a sandy compost. Less water is needed in winter than in summer.

The following are some of the flowers that are successfully grown under glass. (See also Carnations and Chrysanthemans.)

BEGONIAS

Tuberous-rooted begonias are generally more popular than the fibrous-rooted varieties, for they produce large single or double flowers in various shades of red, orange, yellow, pink and white. Fibrous-rooted begonias produce larger plants, but the individual flowers are much smaller. Many fibrous-rooted species have attractive ornamental foliage.

TUBEROUS-ROOTED BEGONIAS

These flower in summer and autumn. The greenhouse should be shaded from direct sunlight and have a temperature of 65° F. (18° C.) during the growing season and 45° F. (7° C.) in the winter.

In March, plant the tubers in boxes in damp peat or leaf mould so that they are only half buried. When they are rooted, and have produced shoots \(\frac{1}{2} \) in, long, pot them into 6-in, pots in a compost of 3 parts fibrous loam, 1 part leaf mould and 1 part well-decayed manure. Water sparingly at first, but freely once the plants are growing strongly. After flowering, reduce watering gradually until the tops have dried off. Then turn the pots on their sides, so that the tubers dry out during the winter.

Recommended varieties are: Victor Boret, orange. Princess Victoria Louise, pale pink. Evelyn Tavenat, salmon-pink.

FIBROUS-ROOTED BECONIAS

These flower in autumn and early spring. They are usually propagated by leaf cuttings taken in spring or summer, or by shoot cuttings taken in February or March.

Shade the greenhouse from the sun, and maintain a temperature of about 60° F. (16° C.) in spring and summer and 30° F. (10° C.) in autumn and winter.

Keep the plants moist in the early stages and syringe them daily. Water sparingly in the autumn, and when flowering is over, reduce watering still further. Keep the plants fairly dry until March, when they may be reported into 6-in. pots.

Recommended are:

Begoma fuchnoides, 3-ft., scarlet flowers.

B. Gloire de Lorraine, 2-ft., light pink flowers.

B. imperialis, a short, creeping plant, with velvety, bright green leaves, white flowers.

B. rex, +ft., silver and purple foliage, pale pink flowers.

CINERARIA

Plants with fairly large leaves and large heads of daisy-like flowers in white, pink, red, mauve or blue, which bloom from December to May.

Sow the seed any time between April and July in John Innes seed compost at a temperature of 65° F. (18° C.). When the seedlings appear, pot them off into 3-in, pots and later into 6-in, pots, using John Innes potting compost No. 2 or Eclipse No-Soil compost.

Place the pots in a cold frame from July until early October, when they should be moved to the staging of the greenhouse. Shade them from strong sunlight, and maintain a temperature of 55° F, (13° C.). Feed the plants twice a week from September onward with diluted Liquinure. Always keep the soil in the pots most, but do not over-water.

VARIETIES

Recommended large-flowered varieties

Brilliant Ruby Pink Pearl Royal Blue

Recommended small-flowered varieties BIRL

King, rosy-carmine Sky Blue White Star

CYCLAMEN

A perennial that produces flowers of white or various shades of pink, cerise, crimson or salmon-scarlet during the winter. The foliage is often marbled.

Sow seeds 1 in. deep in John Innes seed compost any time between August and November, or between January and March, at a temperature of 55° F. (13° C.). When the seedlings are about 1 in, high, pot them into 3-in, pots, containing John Innes potting compost No. 1 or Eclipse No-Soil compost, to continue growing at a temperature of 50° F. (10° C.) on the greenhouse staging. During the summer the pots may be placed outside in a cold frame, shaded from direct sunlight, Move them back to the greenhouse and a temperature of 50° F. (10° C.) at the end of September.

When in flower, feed cyclamen with diluted Liquinure once a week. After the flowers die, keep the corms almost dry from May to July, and repot them in August, leaving the tips just above the surface of the soil.

Syringe every few days until new growth appears, and then water daily until the plants cease to flower.

ERICAS

Ericas, or heaths, are small shrubby plants bearing white, pink or mauve flowers from late November to August according to species.

The most commonly grown is Erica hyamelis from South Africa, which produces white flowers flushed with rosepink from November to February. This erica is a lime-hater and should be given a peaty-sandy compost and watered with soft water. Maintain a temperature of 45 to 55° E. (7 to 13° C.).

GLOXINIA

Plants with tuberous roots and huge, bellshaped flowers of pink, crimson, purple, lilac or white, which bloom in the autumn.

Sow seeds in John Innes seed compost. in March, and when the seedlings are I in, high, pot them into J-in, pots, using John Innes potting compost No. 1. The pots should have good drainage, and should stand in a shady part of the greenhouse as near as possible to the glass, The temperature from January to October should be 65° F. (18° C.), and from October to January 50° F. (10° C.). Feed once a week with diluted Liquinure as soon as the buds appear, and cease feeding when flowering is over.

If gloxinias are raised from tubers, pot these up singly into 3-in, pots any time between the middle of January and the end of March. Do not completely bury the tubers, and press the soil fairly firm. When the tubers are growing well, pot them up into 6-in, pots, using John Innes potting compost No. 2. Give only a little water in the early stages of growth, but when the leaves are larger and the plants are growing vigorously, water more freely. When flowering is over, reduce watering until the leaves die off, and then keep the tubers dry until the following spring.



This type of begonia should be shaded from direct sun in a temperature of 65° F. (65° C.) in the growing season, and 65° F. (7° C.) in the winter

Recommended varieties are: Fire King, pale crimson. Lord Roseberry, purple. Petunia, lilac.

PELARGONIUM

Zonal and ivy-leaved pelargoniums are known as geraniums; both these and a third type, show, grow well in pots. The leaves are green or variegated, and the flowers grow on firm stems.

SHOW PELARGONIUMS

These flower in spring and early summer. Stand pots near the glass of the house, in a temperature of 45° F. (7° C.) from September to March, and 50° F. (10° C.) from March until the end of May. After flowering, place the pots outside in the sun until the end of September.

Take cuttings of firm ripe shoots 3 in. long in July or August and root them in a mixture of sand and peat in a cold

THE USE OF GLASS IN THE GARDEN



frame. When the cuttings have rooted, pot them into 3-in, pots in John Innes potting compost No. 1 and after a month pinch back about 1 in, of the growing point of each plant to encourage busy growth. For up into 6-in, pots early in September, and repot old plants at the same time. Water freely from March until June and moderately at other times.

Recommended varieties are:

Chelsea Gem, pink flowers, silver leaves.

Happy Thought, crimson flowers, dark green leaves with gold butterfly markings.

H. Cox, rose flowers, pale gold leaves marked with purple, red or cream.

Hills of Snow, purple flowers, creamy leaves with white markings.

ZONAL PELARGONIUMS

These flower at almost all seasons, but should be shaded from the sun when in full bloom. The winter-flowering types will thrive in a sunny cold frame from June to September, and when returned to the greenhouse will need a temperature of 50° F. (10° C.) until the following March. For summer-flowering plants, maintain a greenhouse temperature of 40° F. (4° C.) from August to March, and 55° F. (13° C.) from March till May.

Take cuttings of zonal pelargoniums in late summer. When these have rooted, pot them up into 3-in, pots, and later into 6-in, pots. Feed with Liquinure twice a week when the plants are well established. At the end of the season prune back the old plants quite severely.

Recommended varieties are: Barbara Hope, carmine.

Caledonia, purple.

Drummer Boy, vermilion.

Hope, turkey-red.

Mrs. S. J. Ward, rose.

Prince of Wales, Tyrian purple.

Willingdon Gem, mandarin-red with a white eye.

IVY-LEAVED PELARGONIUMS

These flower in the summer and are propagated by cuttings taken in August or September. When the cuttings have rooted, put them into 3-in. pots, using John Innes potting compost No. 1. Cut back the plants in February or March and repot them when necessary into 6-in. pots. When the plants are well established in 6-in. pots, feed twice a week with diluted Liquinure. Water freely during the summer but moderately at other times.

The temperature of the greenhouse should be 50° F. (10° C.) from March to September, and 40° F. (4° C.) from September to March.

Ivy-leaved pelargoniums look well in hanging baskets or urns, or trained up trellises, and they also make a good cover for banks or high walls. They are not completely hardy, however, and should be moved back to the greenhouse in late September.

Recommended varieties are:

Galilee, double pink.

La France, imperial purple.

Lilac Gem, pale mauve.

Millfield Gem, a hybrid, rose-blotched and feathered with rosy-red.

Neon, vivid cerise.

The Duchess, white and Tyrian purple.

PRIMULAS

Many kinds of primula can be grown successfully in a greenhouse, and most of them flower in the winter and spring.

Sow the seed in March or April in John Innes seed compost, and when the seed-lings are I in. high, pot them up into 3-in, pots, using John Innes potting compost No. I. Always pot primulas firmly and a little more deeply than other plants. Roots often form from the base of the lower leaves, helping to give extra support to the plants, which otherwise tend to be top-heavy.

Primulas may be brought into flower in their 3-in. pots, or they may be potted up into 6-in. pots. Keep the pots in a shady corner of the greenhouse at a temperature of 50° F. (10° C.) during the growing season, and 55° F. (13° C.) during the flowering season, Give plenty of ventilation.

Feed the plants once a week when the compost is full of roots, but stop feeding when the flowers start to open. Keep the compost just moist; never over-water, or the leaves will turn yellow.

Some hairy-leaved primulas, particularly Primula obconica, may cause eczema or primula rash to break out on the hands and forearms, and those who are allergic to these plants are advised to wear gloves when handling them.

Recommended are:

Primula obconica, large flowers in shades of pink and mauve in winter.

P. malacoides, the fairy primrose, bears dainty flowers of lilac, pink, rose or white, in tiers round fairly tall stems. May be brought into bloom at almost any time by sowing the seeds at different times.

ROSES

Roses grown in pots in a cold greenhouse reveal a pristine beauty that is rarely, if ever, seen outside. Both blooms and foliage attain a perfection that is virtually impossible in the open, where the roses are always at the mercy of the elements. In a cold greenhouse the first flowers usually appear about a month earlier than those outside.

The greenhouse should have a winter temperature of about 45° F. (7° C.) at night, and at no time should the temperature rise above about 60° F. (16° C.).

FIRST SEASON

In October, prepare 10-in, pots by placing crocks in the bottom to facilitate drainage, and charcoal to sweeten the planting mixture. Follow this with a compost of three parts moderately heavy loam and one part well-rotted manure, and add two handfuls of bone meal. Then dig up trees of the chosen variety, or buy them from a nursery. Trim the roots so that they can spread comfortably in the pot, and plant the roses so that the soil level when pressed down firmly is not less than 2 in, below the top of the pot.

Stand the pots in a sheltered corner out-of-doors; shorten any extra long stems to prevent the bushes from blowing about and loosening in their pots before the roots are firmly established.

Bring the pots into the greenhouse in December, and keep them bone dry until the foliage has dropped off, usually in two to three weeks. Then prune really drastically to only two buds from the base of each main stem. Failure to do this will result in thin growth and mediocre flowers.

WATERING AND FEEDING

Water thoroughly after pruning, but give no more water until fresh growth appears. Then water once a week, and when the roses are growing well, more frequently still; never let the pots dry out. If in doubt, rap the side of the pot with a wooden hammer or with the knuckles; a dull sound means that the soil is still damp, and a hollow ring indicates that watering is essential. Remember that a cracked pot always produces a dull sound.

Feed with a proprietary fertilizer from the end of March, following the manufacturer's directions. The frequency of feeding will depend on the progress of each plant, but every seven to ten days is usually sufficient. After the first flowering has ended, transfer the pots outside and water occasionally during dry spells. Re-house the trees in December, after first removing the top inch or

THE USE OF GLASS IN THE GARDEN

so of potting mixture and replacing it with fresh similar material. The first year's treatment can then be repeated.

PESTS AND DISEASES

For the treatment of mildew, aphids, thrips and caterpillars see Roses.

Another potential pest for the greenhouse rose is red spider. Leaves attacked by red spider mite assume a mottled, yellowish appearance on the underside, and fall prematurely. Liquid derris gives some control, but current literature from leading insecticide manufacturers should be consulted for the most up-todate treatment.

VARIETIES

The following varieties are reliable for large, specimen blooms under glass:

rge, specimen blooms under glass:
Christian Dior, crimson.
Eden Rose, deep pink.
Ethel Sanday, yellow and apricot.
Gail Borden, light pink and pale yellow.
Margaret, light pink.
Montezuma, salmon-ted.
My Choice, salmon-pink and buff-

My Choice, salmon-pink and buffyellow. Paris Match, deep pink. Peace, yellow and cream. Pink Favourite, deep pink. Prima Ballerina, deep pink. Silver Lining, light pink.

Medium-sized, decorative blooms are:

Baccara, deep vermilion, grows far better in the greenhouse than in the garden.

Lady Sylvia, flesh-pink.
Lilac Time, lilac.
Message, white.
Mrs. Sam McGredy, scarlet and orange.
Spek's Yellow, deep yellow.
Super Star, vermilion.
Wendy Cussons, deep pink.

Floribundas include:

Anna Wheatcroft, rosy-salmon.
Celebration, light salmon.
Chanelle, buff-pink.
Dickson's Flame, scarlet.
Elsinore, red.
Flamenco, deep pink.
Highlight, orange-scarlet.
Meteor, scarlet.
Orangeade, scarlet.
Sherry, brownish-red.

Electricity in the Garden

Many gardening jobs that are timeconsuming and laborious if done by hand can be done quickly and efficiently by electricity, thus enabling the gardener to undertake interesting tasks that otherwise could not be attempted at all.

As a means of heating, electricity can be used in greenhouses and frames for producing early crops and bringing plants through the rigours of an unpredictable winter. The thermostat stands as an automatic guard against a sudden drop in temperature at any time of day or night, thus making the greenhouse a practical possibility where the gardener could not spare the time to keep the temperature constant by other methods.

Used for power, electricity will quickly and efficiently mow the lawn, cut the hedge, pump the water for a stream, and take a lot of the hard work out of cultivating the soil. And for those who garden on a large scale, it can saw logs and provide power spraying and irrigation.

As a source of light, it can be used to supplement daylight during the dark days of winter, to speed up—or retard—the growth of certain plants, or to replace daylight completely for raising plants in solid buildings.

But the important thing to remember is that however electricity is used in the garden, all electrical connections should be properly installed by an experienced electrician and not attempted by the do-it-yourself handyman. Using electricity in the garden has particular safety hazards because of the dampness that is present.

HEATING

SOIL WARMING

Electricity can be used to provide bottom heat economically and efficiently on greenhouse benches and borders and in propagating- and garden-frames. To produce early vegetables in the garden-frame it has proved an efficient, if not complete, replacement of the manure hot-bed, the use of which is diminishing as manure becomes more difficult to obtain.

Soil warming cannot replace the contribution to fertility made by the manure imported for hot-beds, but it can effectively replace it as a source of heat for producing early lettuces, carrots, turnips, radishes and cauliflowers.

SOIL-WARMING EQUIPMENT

There are two distinct types of soilwarming equipment—low voltage and mains voltage.

A low-voltage system consists of a small transformer and a length of galvanized from wire, which may be plastic covered. The gauge and length of the wire will be calculated to give a known electrical resistance and should not be shortened or replaced by any other piece of wire.

Mains voltage equipment consists of a central resistance wire covered with insulation and, in some cases, protected by a metal sheath. It is connected direct to the mains and runs at mains voltage like any other piece of electrical equipment.

Whichever system is used, the results and running costs are the same. The initial cost of the low-voltage system is higher, but it is slightly safer if a spade or fork is likely to be used.

HOT-BEDS

The most profitable way to use a gardenframe is as a hot-bed for producing early salads and vegetables while they are scarce and expensive to buy. Melons or cucumbers may be grown in it after the early salads and vegetables have been harvested, or quick-maturing turnips such as Early Snowball may be sown.

Almost any type of frame can be used, but obviously the better it is constructed the more efficient it will be. The two most popular types are the 6 by 4 ft. English light frame, and the two-light Dutch light frame. Both these cover about the same area, but Dutch lights are easier to manipulate than the heavy English lights.

Thus the use of electricity transforms the ordinary garden-frame into a miniature greenhouse. It lacks headroom, of course, but even this limitation is turned to advantage by making it very economical on fuel. The actual running costs will vary according to the temperature maintained, but an average frame will use about 1½ units of electricity a day.

To construct a hot-bed the wire or cable is laid in the frame and covered with 6 in, of soil. Lay the wire so that it covers the area as evenly as possible, giving an electrical loading of 6 watts per sq. ft. To find the loading required, the area of the frame is multiplied by 6. So for a 6 by 4 ft, frame, which, of course, has an area of 24 sq. ft., the loading would be 144 watts. Thus a 150-watt soil-warming cable or transformer would be suitable.

With a loading of 6 watts per sq. ft., 10 hours of warming each night would be sufficient in the south of the British Isles, but in the north 12 hours would be required. A time-switch can be fitted which will do away with the need to switch the unit on and off each day.

PROPAGATING-FRAME

Many plants can be propagated in a soilwarmed frame when the early salad crops are finished. Remove the soil down to the wires and replace it with a 2- to 3-in, layer of sharp sand which will conduct warmth to the pots and boxes of seedlings and cuttings. Most of the half-hardy annuals, and vegetable seedlings such as celery. leeks, cauliflowers and lettuce, can all be raised in this way. So can tomatoes, marrows, melons and a host of others. To give them an extra boost during germination, leave the current on the whole 24 hours instead of switching off each morning, and cover the frame with a mat each night to conserve the heat.

Air warming will broaden the scope of the frame and increase its usefulness considerably. Mains voltage, plastic-covered soil-warming cable, fixed round the inside of the frame on porcelain or plastic cleats, is usually used for such an installation. Copper-covered, mineral-insulated cable can also be used, and makes a neat, robust, effective installation which should give many years of trouble-free service. To conserve heat a frame must be well constructed and air-tight; during very cold weather, loosely-filled sacks of straw placed round the outside of the frame will help to keep in the heat.

In the interests of economy, air warming should be controlled by a thermostat which will switch off the current as soon as the inside of the frame reaches the required temperature. For an average frame with brick sides, or timber an inch or more in thickness, the electrical loading required will be 15 watts for every square foot of glass. For a 6 by 4 ft. frame, the loading will be 360 watts; a 300- or 350-watt soil-warming cable would be suitable.

SOIL-WARMED GREENHOUSE BORDERS

The low-voltage system is usually used for this purpose, the wires being laid 9 indeep. The electrical loading can be from 5 to 8 watts per sq. ft., which means that a 100-watt transformer will be capable of warming up to 20 sq. ft. of border. As soil retains the heat well, it is usually sufficient to have the current on for only 12 hours out of each 24.

SOIL-WARMED GREENHOUSE BENCHES

These are constructed by placing 2-in. layers of sand on the benches, laying the cables on this and covering with a further 2 in. of sand. Mains voltage cables are ideal for this purpose, the electrical loading usually being from 5 to 8 watts per sq. ft.

To convert an ordinary slatted bench, fix 6-in, deep boards round the sides and cover the slats with a layer of roofing felt. Place the pots and boxes of cuttings and seedlings on the surface of the sand and pack the spaces between the pots with moist peat to retain the heat. The heating wires raise the temperature of the sand and this heat is in turn transmitted to the pots and boxes. Control the temperature of the sand at 60° F. (15° C.) by placing a rod-type thermostat at right angles across the bench with the rod just below the surface of the sand. Alternatively, it can be hand switched when a soil thermometer placed under one of the boxes indicates the need.

PROPAGATING CASES

To take the warm bench a stage further, a propagating case can be built over it. This can then be improved still further by fitting soil-warming cables round the inside of the case to provide air warming, making, in effect, a heated greenhouse within a greenhouse to provide correct conditions for germinating seeds and rooting cuttings. In a heated house this can effect a considerable saving in fuel as a temperature of 60 to 65° F. (15 to 18° C.) can be maintained quite economically within the case, while the general space

temperature is kept down to 45 to 50° F. (7 to 10° C.).

GREENHOUSE HEATING

For heating a small greenhouse, electricity has a decided advantage over other fuels. It is efficient, reliable, clean, economic and, most important, it is automatic and needs no attention. There are numerous methods of heating a greenhouse electrically, and the running costs are about the same in each case.

A beating system should replace the heat lost through the fabric of the greenhouse even in the severest weather; to determine the size of the heater required, it will be necessary to calculate that loss. Heating for a greenhouse should be based on a minimum outside temperature of 20° F. (-5° C.). So if the greenhouse is to be maintained at a minimum temperature of 45° F. (7° C.), the heating system will have to be capable of raising the temperature by 25° F.

For an accurate calculation it is necessary to know the thermal conductivity figure, or "U" value of the various materials used in the construction of the greenhouse, which are as follows:

Horticultural glass	1.0
Woodwork 1 in, thick	0.5
Woodwork 11 in. thick	0-4
Brickwork 4] in, thick	0.6
Brickwork 9 in. thick	0-5
Floor soil or concrete	0-33

The calculation is made in three stages:

1. Measure the surface area of the glass (including the sash bars), brickwork, soil, etc., of the greenhouse. Multiply each area by the appropriate "U" value, then add up the total.

- Multiply the total by 0-39. (This figure takes into account the factor for fortultous losses—1-33, and the fact that there are 3-412 B.T.Us (British Thermal Units) in a watt, viz. 1-33 divided by 3-412=0-39.)
- 3. Multiply the result of this by the

HOW MUCH HEAT IS REQUIRED?

To work out the heat required in a greenhouse, surface areas of the structure have to be measured, and the "U" values of the materials allowed for. The following calculation is for a typical span-roof house with a 41-in. brick wall, and is to maintain a temperature of 45° F. (7° C.) inside, against 20° F. (-5° C.) outside.

entre en	Area (sq. ft.)	from table	Heat less b.T.U./Hr./**
Glass roof 12 ft. × 4 ft. 6 in. × 2	108	x I	108
Glass sides 12 ft. x 3 ft. x 2	72	2.1	72
Glass ends # ft. × 3 ft. × 2	48	×1	48
4 ft. × 2 ft. × 2	16		16
Brick sides 12 ft. × 2 ft. × 2	-48	× 0-6	29
Brick ends (including door)			
8 ft. × 2 ft. × 2	32	× 0-6	19
Soil 8 ft. × 12 ft.	96	× 0-33	32
			324

Multiply 324 \times 0.30 = 126 watts per "F. rise Multiply by "temperature lift" 25° F. = 126 \times 25 = 3,150 watts Choose the next standard-size heater above 3,150 watts—3 $\frac{1}{2}$ kW,

"temperature lift" (the difference berween the inside temperature to be maintained and the 20° F. outside temperature).

TYPES OF HEATER

The output of a heater is determined by its electrical loading. Any two heaters of the same loading will produce the same amount of heat, while consuming identical amounts of electricity, but some types distribute the heat more efficiently than others. The number of units per hour consumed by a heater is equal to the kilowattage of the heater, so that a 3½-kilowatt heater will consume 3½ units of electricity per hour.

Tubular Heaters are normally used in small greenhouses; there is a special waterproof, horticultural grade, available in lengths ranging from 2 to 10 ft., which should be used under greenhouse conditions. The electrical loading is usually 60 watts per foot of length.

The best place for mounting a tubular heater is low down on the side walls of the house. If this happens to be underneath a solid bench, a gap of at least 3 in, must be left between the back of the bench and the side of the house to allow a free passage of air.

Convector Heaters are the most satisfactory form of portable heater. They are reasonably cheap to buy, but only the ones specially designed for the greenhouse should be used.

A convector heater consists of a galvanized-iron cabinet containing a heating element. The air enters at the bottom, passes over the element and is warmed before being discharged at the top. Heat distribution is not quite so good as with tubular heaters, Sizes range from 500 to 3,000 watts.

Fan-ossisted Heaters work on the same principle as convectors, but the air is forced over the element by a fan and after being warmed circulates throughout the greenhouse.

Fan Unit Heaters are another type of Ianassisted heater, but the fan is mounted immediately behind the element and the air is blown out at a fairly high velocity and at a comparatively high temperature. These heaters are particularly useful in large greenhouses for providing frost protection, but the hot air could cause damage if allowed to blow directly on to the foliage of tender plants. If used in a small greenhouse, a suitable mounting point is above the door.

Fan heaters may be used in conjunction with specially-designed perforated plastic tubing which distributes the warm air throughout the house; but such installations are more suitable for the medium to large greenhouse, as 4 kilowatts is the smallest size available. Fan unit heaters are quite robust and should have a fairly long life.

MINERAL-INSULATED CABLES

A fairly new development for heating greenhouses is the use of copper-covered cables that are mineral-insulated—that is, insulated with magnesium oxide instead of plastic or rubber. These make a neat, attractive installation, fixed to the wall beneath the bench in the same place as the tubular heaters. This system has the advantage of being low in initial cost, but has the disadvantage of running at fairly high surface temperatures.

ELECTRIC WATER HEATING

An existing hot water system can be converted to electricity by fitting an immersion heater into the pipes. The solid fuel boiler is disconnected and the flow and return pipes are connected together to form a closed loop.

The cost of conversion is not high, and it is particularly useful for replacing a worn-out coke boiler where the heating pipes are still in good condition.

THERMOSTATIC CONTROL

Whichever type of electric heating is installed, a reliable thermostat will be essential to its economic operation, and the expenditure on a good-quality 2+-in. rod-type thermostat with a waterproof head will be saved quite easily during the first winter. The thermostat should not be set too high or unnecessary electricity will be consumed. The best position for the thermostat is one-third of the way along the house from the door, mounted horizontally about 8 in. from the glass, one-third of the way down from the ridge.

TEMPERATURES

High night temperatures in a greenhouse are usually quite unnecessary, and for the gardener who is using his greenhouse in a general way, a night temperature of 45° F. (7° C.) will be high enough during the winter months. Consumption of fuel will depend on the temperature maintained, and if it is raised by only 5° F. the fuel consumption will be doubled. If the temperature should be raised to 60° F. (15° C.), the fuel consumption would be four times greater than it would be at 45° F.

GREENHOUSE VENTILATION

In addition to providing heat for the greenhouse, electricity can play a vital role in keeping it cool by controlling the ventilation. By the use of thermostatically-controlled extractor fans, ventilation of small to medium greenhouses can be entirely automatic. The fan is fitted into one end of the house, preferably as high as possible in the end opposite to the door. When the optimum temperature is exceeded the thermostat operates and the fan switches in and runs until the temperature falls by a few degrees. This, of course, is working in the reverse directo the heating thermostat.

The following gives a rough guide to the size of fan required for 30 air changes per bour: A 74-in, diameter fan for houses up to 280 cu. ft. capacity.

A 9-in. diameter fan for houses up to 500 cu, ft. capacity.

A 12-in, diameter fan for houses up to 1,000 cu. ft. capacity.

For larger greenhouses, the automatic operating of traditional ventilators may be more suitable; there are now several types of equipment on the market for doing this.

SOLL STERLLIZATION

The gardener who wishes to mix his own compost and must sterilize the loam will find an electric soil sterilizer most useful. This works by heating the soil to 180° F. (82° C.), which destroys insect pests, disease spores and weed seeds. There are several different models on the market.

PEST CONTROL

Pests in the greenhouse can be dealt with by means of a small thermostaticallycontrolled, electrically-heated unit which volatilizes insecticides, causing a continuous flow of minute particles into the atmosphere.

ELECTRIC POWER

By providing the energy to drive motors, electricity can do much to lighten the load of the gardener.

The electrically-driven lawn mower is an efficient, quiet machine. In the smaller cheaper models, only the cutting blades are driven by the motor and the mower still has to be pushed; the completely electric mower is propelled by the motor as well as having the cutting blades driven. Such a machine has no starting troubles, requires no engine maintenance, and will give many years of satisfactory service. There is, of course, the slight disadvantage of a trailing cable, but this can be easily overcome by working away from the power source, a simple technique which can soon be mastered.

A battery-driven mower does away with even this slight hazard. Driven at two speeds by a 12-volt battery, it will give up to three hours mowing for each charging of the battery.

ROUGH GRASS CUTTER.

For cutting rough grass on banks and in awkward corners, there is an electricallydriven grass cutter. This has a high-tensile steel blade, mounted direct on the endof the motor shaft, which revolves at high speed. It is also useful for trimming lawn edges.

HEDGE TRIMMERS

An electric hedge trimmer of the reciprocating clipper type is a first-class labour saver. It should be well maintained and used with care; and always powered through a portable transformer so that the operating voltage is reduced to 110.

ELECTRIC HOES AND CULTIVATORS

These have much to offer the busy gardener and with a little practice in their use can become very useful tools indeed for hoeing between herbaceous plants, cultivating between soft fruit bushes, and preparing vegetable ground for sowing, even to actually drawing the drills for peas and beans.

ELECTRIC PUMPS

For an expenditure of a little over £10, an electric pump will provide the power for a stream in the garden. In large gardens, pumps can also be used for irrigation, spraying fruit trees, for straightforward pumping from wells.

ARTIFICIAL LIGHT AND PLANTS

To the keen gardener with an experimental turn of mind, electric light (provided the correct lamps are used) can be a very useful asset indeed.

SUPPLEMENTARY LIGHTING

This is used to provide high-intensity lighting to plants, seedlings and cuttings to supplement natural light during the winter, and produce vigorous, healthy plants during the early part of the year.

Commercial growers use 400-watt mercury vapour lamps for raising tomato and cucumber seedlings during the early months of the year, but the average gardener will find that fluorescent tubes are quite suitable for this purpose. They can be used singly, or in banks of two, three or four. A 5-ft., 80-watt reflectorized tube will effectively illuminate a bench area of 5 by 1\frac{1}{2} ft. when mounted 2 ft. above the bench. Under such a lamp all manner of seedlings and plants can be grown, and some plants, such as gloxinias and saintpaulias, are quite content to spend the whole of their lives under artificial light.

The lamps can be controlled by a timeswitch and burn throughout the day, or they can be switched on at dusk and left burning to extend the day to 16 hours.

REPLACEMENT LIGHTING

With these same lamps it is possible to grow a wide range of plants entirely by artificial light, where a temperature of 60° F. (15° C.) can be maintained. The area the lamp will effectively illuminate and the mounting heights are the same as for supplementary lighting. About 14 to 16 hours would be a suitable period of light each day, but this could be the subject of experimentation.

BULB FORCING BY ARTIFICIAL LIGHT

While there may be some doubts as to the desirability of replacement lighting, there is no doubt that bulb forcing by electric light is useful. In a cellar or shed, one or two ordinary 100-watt electric lamps can be used to force bulbs quickly and easily.

Daffodils and tulips are the most suitable. The varieties that are normally forced should be boxed and plunged under peat or ashes in the normal way and brought in for forcing when the shoots are an inch or so high and there is

evidence of vigorous root action. Daffodils and tulips should be given 12 hours light out of each 24, with one 100-watt lamp for every sq. yd. of bulbs mounted about 3 ft. above them. If daffodils and tulips are forced together, maintain a temperature of 60 to 65° F. (15 to 18° C.). Do not over-water the tulips and never spray the buds or foliage from above.

For hyacinths the treatment is a little different as they require, with the exception of a few varieties, 10 days in the forcing shed in complete darkness at 75° F. (24° C.). From then on, 12 hours artificial light can be given each day and the temperature lowered to 70° F. (21° C.)

DAT-LENGTH MANIPULATION

The time of flowering of mid-season and late-flowering chrysanthemums can be delayed by maintaining a day length of over 14½ hours from mid-August until early October.

These varieties are known as short-day plants and do not develop their buds until the length of the day drops below 151 hours—about mid-August.

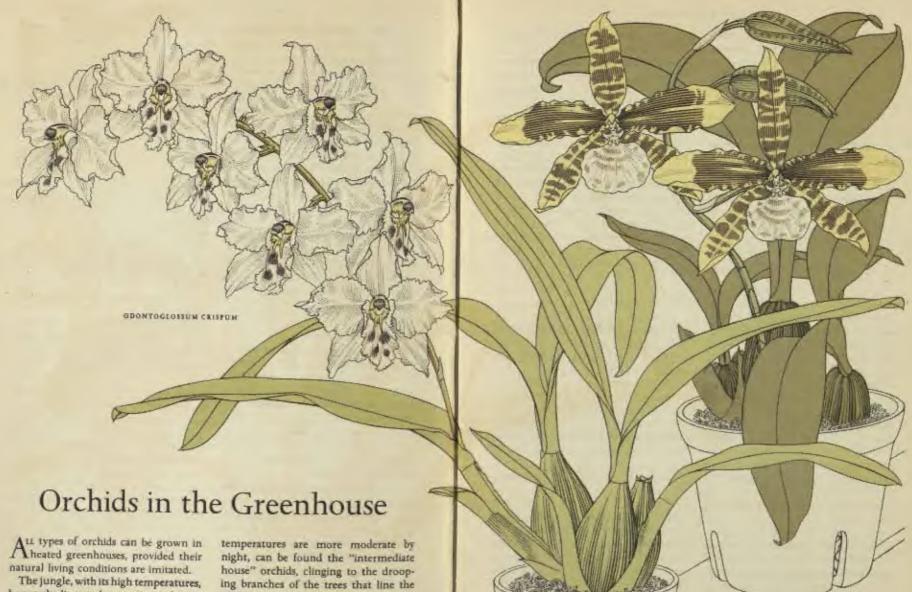
Quite low intensity light is sufficient for this purpose and is applied by hanging too-watt tungsten lamps over the plants out on the standing ground. The lamps are mounted at 6-ft. intervals 6 ft. above the rows, each line of lamps being sufficient for a 4-ft. bed.

The best response is obtained by switching the lamps on each night from midnight until two a.m. by a time-switch.

MISCELLANEOUS USES

In addition to these various applications there are several other uses of electricity, such as automatic watering and mist propagation, a method by which cuttings are automatically sprayed with a fine mist.

The combination of a number of these applications in a greenhouse or frame can make it completely automatic.



The jungle, with its high temperatures, heavy shading and excessive and continuous humidity, is the home of the "tropical" orchids. In the savannah, at about 2,000 ft, above sea level, where the jungle is not so thick and where the

temperatures are more moderate by night, can be found the "intermediate house" orchids, clinging to the drooping branches of the trees that line the streams and gullies. In the Himalayas and in the Andes, at heights between 3,000 and 19,000 ft., where conditions are cooler and the atmosphere more rarefied, grow the so-called "cool house" orchids.

ODONTOGLOSSUM

CLANDS

The latter are the orchids whose conditions of growth can be most easily imitated in the greenhouse, and they and the genus Cymbidium—the easiest orchids to grow—are discussed here.

SELECTION

It is possible to buy seedlings of orchids such as cymbidiums for a few pounds a dozen, although seedlings from firstclass parents are more expensive and are sometimes more difficult to grow successfully. It is therefore advisable to buy a number of larger, robust plants which are of flowering size. Very cheap plants should be avoided, as they are probably rootless or one of the poorest types of orchid. The plants recommended in the list on pages 927 and 928 can be bought for a relatively low price, and are only a few of the many hundreds available in the British Isles from reputable orchid nurserymen.

Cymbidiums come into flower during the winter and will remain in flower for many weeks. The flowers should be cut a few weeks after they open, because they are waxy and heavy, and if the plant is strained, the following year's growth will be delayed.

COOL HOUSE ORCHIDS

Normal cool house orchids include approximately 100 genera, 4,000 or 5,000 species and many thousands of hybrids. Among these there are even some of the more exotic and magnificent orchids, such as Vanda corules, the blue Indian orchid; the rosy-white Cymbidium insigne (syn. C. sunderi) from Cochin-China; the brilliant orange Dendrobium fimbridium from India, and its variety eculation with two rich crimson eyes, also from India.

These orchids need a constantly moist atmosphere, though humidity will reach about 100 per cent in the spring and summer months during the day, and drop to as low as 60 per cent during the winter nights.

In the winter the temperature in the greenhouse can be allowed to drop to as low as 45 to 48° F. (7 to 9° C.) and should rarely be raised artificially above 50 to 55° F. (10 to 15° C.).

Give the orchids a little extra artificial heat during the spring months when it is often cold and dank in the early morning, but avoid high temperatures towards the end of the year when the bulbs are maturing.

If there is adequate moisture in the atmosphere, sun heat can increase the temperature to as high as 80 to 85° F. (27 to 29° C.) without damaging the plants.

The exception to these orchids which tolerate extremes of temperature are the pseudo-bulbless orchids. These do not have bulbs above ground to contain moisture and nourishment, and so require a constantly even temperature, preferring a range of not more than 20° F. (11° C.), approximately between 48 and 68° F. (9 and 20° C.).

A typical pseudo-bulbless orchid is Diss grandiflors, from The Cape, which grows at a high altitude in a cool, moist atmosphere; Cypripedium insigne is another popular species.

Odontoglossum crispum, from Colombia, which grows on trees clinging to the almost vertical sides of north-south valleys and gorges, through which run fast-moving, moisture-giving streams, is representative of another cool house group now widely grown.

SHADING

The shading of orchids is essential, but should be carried out judiciously as it cuts out the sun's heat as well as the sun's light. Few plants suffer from too much sunlight, whereas many suffer from too much shade, and it is far easier to over-water a plant in a heavily shaded greenhouse than in a house that receives a lot of light.

From November to February the greenhouse can be left fully exposed to direct light. In March and April such exposure would be dangerous, because the plants are often rather soft after the winter, and at midday the greenhouse should be shaded on the side exposed to the sun. An easy method is to stipple about 50 per cent of each pane of glass, usually the central part, with whitewash, During March, April, September and October the blinds should be in position ready to be let down in case there are some exceptionally sunny days, and in the four summer months, from about mid-April to mid-August, full use should be made of the blinds.

WATERING

The heating of the greenhouse and the shading of the glass have a direct bearing on the amount of water needed to keep the plants in perfect condition.

Do not water the plants very often until new growth appears after the turn of the year. The majority will start to grow as late as February or March, or even April, but some tend to grow rather quickly after their short winter rest. They should be examined at least once a week in the first months of the year, and twice a week by the middle of March, when the days are lengthening.

Never water a wet plant, but never allow a plant to dry out to such an extent that it is "paper" dry. The leaves and the surface of the compost will indicate if the plant is too dry, and if it is, dip the pot into a bucket of rain-water to expel all the air, before watering again with a watering-can.

During the winter months orchids with pseudo-bulbs (the moisture containing, bulbous parts of the plants) require relatively little water. If they are watered excessively at this time the plants will tend to grow again too quickly and will fail to produce their flower spikes.

VENTILATION

Fresh air is almost as essential to orchids as a moist atmosphere. It is difficult to use the roof ventilators freely in the winter, and often also in the spring and autumn when the wind frequently veers to the east; therefore it would be wise to introduce an electric ventilator into the gable end of the greenhouse with a corresponding small vent in the entrance door.

But an electric fan will not be necessary if the ventilators on the leeward side are used judiciously—an opening of even in is often enough to change the air in a short time.

The amount of fresh air introduced into the house should be related to the prevailing atmospheric moisture content and temperature. A large proportion of the air in a small greenhouse of 10 by 12 ft. is changed by merely entering the house twice a day.

REPOTTING

The correct time to repot orchid plants—they are bought from the nurseryman in pots—is when the new growth starts, that is when the base of the bulb swells and new roots appear.

Never use dirty materials in the culture of orchids. Wash the pots and tureens carefully before use. The pots should be porous, and filled with crocks to a quarter of their depth.

Cover the crocks with a handful of compost. Trim the roots and spread



925

a part crushed crocks and charcoal

will thrive.



Water them fairly frequently, except during cold, damp weather and ventilate the greenhouse whenever possible. Even night air can be admitted when the outside temperature is unusually high in summer, but never expose cymbidiums to draughts.

HEATING

Keep the temperature between 45 and 80° F. (7 and 27° C.), and use artificial heating as little as possible. In winter never attempt to force the temperature much above 50° F, (10° C.); on many days it will naturally and beneficially rise higher, and at night the temperature will drop to 45° F, (7° C.).

If there is a heavy frost or a breakdown in heating, and the temperature drops below 45° F., keep the plants dry, place them on the ground, and cover them with layers of paper. They will then survive many degrees of frost for a short time, and will flower well, although later in the season—in May.

Shading is necessary in early spring and summer, and should be in place by the end of February or early March.

Give less shade in autumn in order to harden the plants for the winter and to ensure flowering. Winter is the flowering season for cymbidiums in the British Isles, the earlyflowering kinds starting as early as November. All continue flowering until May.

Cut the flowers when the top bloom has been open a full week and they will last several more weeks in water.

REPOTTING

Repot the plants after flowering when the new growths are 3 to 6 in. high. Cut away all dead roots and, if there are too many healthy roots, shorten them to 4 in. Do not be afraid of cutting them, because the thick, heavy pseudo-bulbs will keep the plants going for some time. Repot into reasonably large pots in the manner explained on page 924, but add one part fibrous loam to the compost.

After repotting do not water the compost for seven to ten days, but if possible keep the foliage syringed and the tops of the pots slightly dampened to encourage new root action.

Further details about the culture of orchids can be obtained from articles that appear in gardening periodicals. The prospective orchid grower is also advised to visit a reputable orchid nursery before making a choice of plants.

SUGGESTED PLANTS

For a greenhouse capable of maintaining 48" F. (9" C.) in winter

The following selection will give variety not only in flower colour, but also in the shape and habit of the plant and flowers.

Cochlieds meelians, scarlet flowers, 1 to 1½ in. across, on slender curving stems 6 to 8 in. long, in April to May. Very floriferous.

C. roses, 10 to 15 rose-coloured flowers, less than 1 in. across, on pendant stems in winter and spring.

Cymbidium giganteum, 8 to 20 fragrant, reddish-green flowers, 4 in. across, on spikes 16 to 24 in. long, in December. C. tracyanum, 15 to 20 fragrant goldenbrown flowers, 4 to 5 in. across, on spikes 2 to 3 ft, long, in late autumn.

The six following cymbidiums are hybrids that flower from January to April, and the blooms measure about 3 to 4 in. across:

C. Bodmin Moor, 14 to 16 flowers in various shades of yellow, of good form and texture.

C. Cérès, up to 24 bronze-red flowers. Easy to grow.

C. Erica Sander and its hybrids, 14 to 16

clear green flowers in arching sprays, a little shy in flowering.

C. Louis Sander, 12 to 16 large, well-formed, cream and pink flowers of good texture.

C. Pauwelsii, up to 30 golden-bronze flowers with a rich red lip. An old hybrid with an outstanding habit.

C. Pearl, numerous, large, cream to buff-pink flowers.

Cypripedium insigne, solitary green and brown flowers, often 3 in. across, from November to January.

C. insigne sanderae, a beautiful yellow and white form.

Dendrobium densiflum, a spray of white and gold flowers, 8 to 10 in. long, from April to May. Each pseudo-bulb can produce two to three inflorescences.

D. nobile, amethyst-pink and white flowers, 2 to 3 in. across, from February to March.

D. achreatum, orange-yellow flowers, about 2 in. across, in spring.

D. pierardii, yellow and pale mauve flowers, 2 in. across, borne in clusters of twos and threes from nodes from March to April.

Epidendrum O'brieniumm, orange-scarlet flowers, 11 to 2 in. across, from May to July.

E. radicans, bright orange-red, longlasting flowers, 1 to 1½ in. across, from March to lune.

E. vitellimm, 10 to 12 orange flowers, 2 in. across, in autumn.

Laelia anceps, Inflorescence 20 to 24 in., with three to five mauve and pink flowers, 3 to 4 in. across, in December and January.

 gouldiana, three to eight amethystpink flowers, over 4 in. across, in winter.

Maxillaria picta, fragrant reddish-brown flowers, 4 to 3 in. across, in winter.

Odentoglessum grande, four to nine golden, chestnut-blotched, long-lasting flowers, up to 6 in. across, borne on stiff spikes from November to February.

O. jamesianum, very large white flowers from apex of bulb, from March to May.

O. pulchellum, ten or more fragrant white flowers, 1 in. across, on spikes 1 ft. high, in March and April.

 schlieperianum, golden, chestnutblotched flowers, which are similar to O. grande but smaller and more numerous, in September.

Oncidium crispum, 10 to 20 golden-brown flowers on a branched spike in spring.

O. forbesii, 10 to 15 rich golden-brown flowers, 2 in. across, from October 10 November. Branched inflorescence 21 ft. long.

O. sphacelatum, numerous, goldenyellow flowers, over 1 in. across, in spring.

O. tigrinum, red and yellow flowers, 3 in. across, on 3 ft. long panicles in winter.

O. varicosum, numerous medium-sized, golden-yellow flowers from September to October on a spike 4 to 5 ft. long.

Any of the cool-growing hybrids of these species are also suitable.

Carnations

IT is impossible to say when the culture of carnations began. They have been esteemed and cultivated in Europe for many centuries, but there is no record of their introduction to Great Britain. The story that they came over with William the Conqueror lacks evidence, but could be true. Judging from old paintings, it seems that for many centuries they differed little from their wild ancestor. Digathus caryophyllus, a native of south and west France. When they began to vary from the wild type is not known, but it is certain that the flowers had reached a high degree of perfection early in the 19th century.

Three principal types of carnation are now grown: the border and the perpetual-flowering carnation, both of which are described in detail below, and the marguerite or Chabaud carnation, which is grown from seed. Marguerite carnations make splendid bedding plants, but their blooms are much inferior to those of the other two kinds. Their culture is the same as that of half-hardy annuals, and they are therefore not further described here.

Unfortunately, inferior plants of all types of carnation are frequently sold, and sometimes it even happens that plants sold as border or perpetual-flowering carnations turn out to be marguerite carnations. There are, however, a number of absolutely reliable specialist firms, and it is best to buy from them.



BORDER CARNATIONS

Carnations of more or less pure descent from the wild species are known as border carnations, and good specimens have a perfection of form and colouring found in few other plants.

The flower is of symmetrical shape, with broad, smooth-edged petals, and there are certain technical terms used to describe the types of colour marking.

Flowers of a single, even colour are called selfs.

In other cases, the basic colour is called the ground, and this may be marked in various ways. Where the markings are irregular or the colours blend, the flowers are called fancies. Picotees have a ground colour of white, yellow or buff, and the marking is confined to a band, which may be broad or narrow, round the edge of the petal. Those that have radial stripes or wedge-shaped marks are called flakes if the marks are of one colour only, and bizarres if the marks are of more than one colour.

The border carnation is a hardy perennial, producing in its first year a single flowering stem, which bears several flowers about July. Two-year-old plants will have a mass of bloom on several stems. Although some people keep plants for a third or fourth year, it is better to replant after two years.



The border carnation is bushy in habit. In its first year a single stem bears several flowers about July; in the second year the plant has a mass of flowers



The perpetual-dowering carnation produces longer and more branching stems.
It is grown under glass to produce howers throughout the year

SITE AND ASPECT

It is essential that the border carnation has a winter rest, and therefore it does not grow properly in countries where the winter is too mild.

Exhibitors often grow border carnations under glass, and indeed some varieties are suitable only for this purpose, but this is done merely to control watering and to protect the blooms. The plants are completely hardy and the greenhouse does not require heating.

Border carnations need a sunny position in an open place where the air can circulate freely; they should not be sheltered by other plants. They are highly resistant to many chemicals and grow particularly well in the smoky atmosphere of industrial areas. They also resist salt spray better than most plants, so they do well near the sea, and they thrive in chalk soils.

They are intolerant of stagnant moisture, and need good drainage. Where there is any doubt about drainage it is advisable to raise the bed 6 in. or so to ensure success, because the plants are surface-rooting.

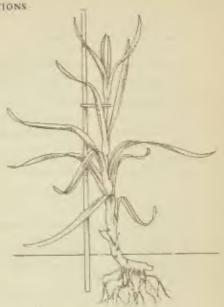
PREPARING THE SOIL

Border carnations will grow in most soils, provided they are not acid. If a simple soil test shows that the soil is acid, add carbonate of lime at 8 oz. to the sq. yd. after digging.

Periodic checks should be made, particularly in industrial areas, for there the rain is usually acid and leaches out the lime remarkably quickly. If necessary, carbonate of lime at 2 oz. to the sq. yd. can be applied to the soil while the plants are growing.

Provided the sub-soil is porous, deep digging is not needed, turning to a depth of 9 in. being sufficient.

Well-rotted stable manure or compost is beneficial if buried below the top



PLANTING A ROOTED LAYER
Border carnations should be planted
firmly but not deeply. The root hall and
soil round the plants should be moist
before planting. Support if necessary
with a short stick and a ring tie

spit. Peat and leaf mould should be avoided except by experts, for after a time they tend to make the soil acid.

Wood or bonfire ash, at up to 8 oz. to the sq. yd., and soot that has been stored for at least three months, at up to 4 oz. to the sq. yd., are particularly beneficial if hoed into the top 4 to 6 in. of soil after digging. Bone meal should also be used, at 4 oz. to the sq. yd.

PLANTING

After preparing the bed, allow it to settle for a month or so and water it well unless there is plenty of rain. Autumn is the best time for planting, but spring is almost as good. Young plants that have been grown in 34-in. pots are usually sent out by nurserymen. The root ball and

the soil round the plants should be thoroughly moist before planting.

Put the plants in about 15 in. apart, planting firmly but not deeply. It is very important that no more of the stem than is absolutely necessary should be below soil level; in no case should the base of any leaves be buried. Deep planting invites stem rot, and the temptation to plant deeply to keep the plants upright should be resisted. Support can be given by a short stick and a ring tie.

CULTIVATION

In winter it is only necessary to firm in young plants if they become loosened by frost; to ensure that all plants are secure enough not to be broken by strong gales, and that no leaves or other rubbish collect round the main stems.

As the soil dries in spring, remove weeds by shallow hoeing, not more than in, deep, larger weeds should be removed by hand, for border carnations have shallow roots, and can be ruined by deep, vigorous hoeing.

If the soil has been properly prepared, young plants will not need spring feeding, but if it has not, and as a treatment for older plants in any case, apply special carnation fertilizer carefully following the manufacturer's instructions. Ordinary garden fertilizers usually have too high a proportion of nitrogen for carnations; this leads to large, sappy growth, which will make the plants prone to disease, and it may also cause the calyces of the blooms to split. Never use organic mulches, for they rot the stem.

Border carnations are fairly resistant to drought, but if there is a long dry spell, give them a good soaking of water at the rate of at least 5 gal, to the sq. vd.

STAKING AND DISBUDDING

As soon as the flower stems begin to grow, insert a thin 3-ft. bamboo cane close to each stem, and secure the young shoot to it with a ring tie, which can be moved upward as the stem grows.

It is most important that the growing tip should not be broken, and border carnations should therefore never be stopped.

The main stem usually carries numerous side stems, and the plant should be disbudded until one bud is left at the top of the main stem and one at the end of each side stem. Disbudding should not be too early or too vigorous; the buds should be removed when about the size of a pea. The top or crown bud opens first, sometime in July, and the side buds follow in succession.

PROPAGATION

LATERING

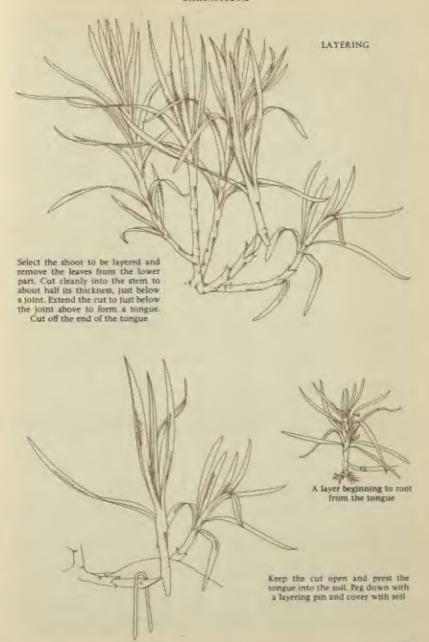
Cuttings of border carnations are difficult to root except in a mist propagator; the usual method of increase is by layering.

Do not layer more shoots than are required, because each layer robs the parent plant of a flower stem the next year. One-year-old plants provide the best layers.

To form a rooting medium, stir into the soil round the plant a mixture of two parts by bulk of peat, one part sharp sand and preferably half a part of vermiculite. The mixture should be moist. (Peat can safely be used here, because it does not remain long enough to acidify the soil.) When flowering is over, layer the carnations in accordance with the instructions given in Propagation.

GROWING FROM SEED

Border carnations do not come true from seed, and there is great variation in the flowers of seedlings, most of them being inferior to named varieties. Very good blooms can, however, be obtained from good seed sold by specialist nurserymen, and there is always a remote chance of producing an outstanding seedling that





can later be propagated by layers to form a new variety. Seedlings are often very vigorous, and make a splendid show in their second year.

Seeds are best sown in boxes in April or May, using the John Innes seed compost. Cover the seeds with not more than in. of soil; at a temperature of 55 to 70° F. (13 to 21° C.), germination will take place in seven to ten days. Pricking and planting out are the same as for any hardy perennial.

PESTS AND DISEASES

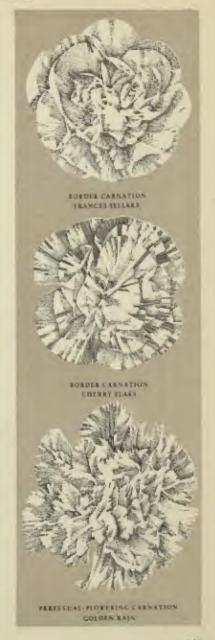
Carnations are seldom attacked by pests, and such common ones as greenfly and caterpillar can be curbed if the usual insecticides are applied.

Cuckoo spit or soapy blight is serious on carnations, and can be cured by using any usual insecticide in sufficient quantity to wash off the froth. Maggots sometimes bore into the stems in winter, but this can be forestalled by spraying the plants every ten days or so during the autumn with a repellent insecticide such as B.H.C. White spots on the blooms of dark varieties, caused by thrips, can be prevented by applying D.D.T. or B.H.C. to the buds.

Stem rot, due to bad drainage or overdeep planting, is serious. The plants should be destroyed, the drainage of the bed improved and new plants put in at the proper depth. Rust, appearing as pustules of brown powder on the leaves in autumn, is a nuisance but not fatal. As soon as the disease appears, use a sulphur spray, according to the maker's instructions, on all plants, whether they are affected or not.

RECOMMENDED VARIETIES

The number of outdoor varieties of border carnation is very large, and a short list therefore depends to a great extent upon personal preference.



When making a choice from specialist catalogues, remember that:

 Some varieties do well only if they are grown under glass, and if outdoor varieties are required, this should be specified:

 Blooms of scented varieties are usually of less perfect form than unscented varieties:

- Yellow or apricot varieties are never scented;
- The relative merit of varieties differs from district to district,

The following is a good general selection, all between 2 and 3 ft. tall:

WHITE AND WHITE GROUND

Madonna, white.

Snow Clove, white, scented.

Alice Forbes Improved, white heavily marked with rose.

Merlin Clove, white edged and marked with purple, scented.

Robin Thain, white, edged and marked with rosy-red, scented.

Picotee Fascination, ivory-white, thin purple edge.

TELLOW, YELLOW GROUND AND APRICOT King Cup, sulphur-yellow.

Sunstar, yellow marked with bright scarlet.

Catherine Glover, yellow marked with scarlet.

Santa Claus, yellow picotee, purple edge.

Consul, flame-apricot.

CRIMSON

Crimson Model. Oakfield Clove, dark, scented. Perfect Clove, glowing, scented.

SCARLET

Royal Mail. Fiery Cross.

Scarlet Fragrance, scented.

FINE

Pink Model, salmon-pink. Frances Sellars, rose-rink. Pink Pearl, pink with apricot tone. Salmon Clove, salmon-pink, scented.

FURPLE AND LAVENDER

Leslie Rennison, pale purple overlaid with rose, scented.

Lavender Clove, full-centred, lavender-grey, scented.

BIZARRES AND FLAKES

Apricot Bizarre, apricot marked with carmine and rose.

Cherry Flake, cerise marked with

Scarlet Flake, orange-scarlet marked with chestnut.

PERPETUAL-FLOWERING CARNATIONS

The familiar carnation of the flower shops, the perpetual-flowering carnation, is so different from the border carnation that many nurseries specialize in either one or the other.

The perpetual-flowering carnation began to be developed about the beginning of this century, and it is now the most widely grown. Although the border carnation features in its ancestry, it is a hybrid involving several Dianthus species. It has a branching habit and produces a flower at the end of each branch. The flowers usually have petals with fringed edges, although varieties with nearly smooth edges are often grown. Fringed-edged carnations are preferred commercially as they travel better. Commercially, too, self-coloured flowers are preferred, but there are also varieties with markings similar to border carnations.

As its name implies, the perpetualflowering carnation blooms thoughout the year, and its ability to flower in the winter is one of its chief assets. It does



- Take a cutting, just below a joint, from a stordy, healthy plant that has several side shoots on each main stem
- 2 The cutting should be 4 in. long and have four fully-developed leaves. Trim off the short curly leaves at the base
- 3. Insert the cutting into a pan of sand, making sure no leaves touch the surface



- 4. The cutting should have made sufficient roots within is days
- 5. When it is rooted, pot up immediately in a 3-in. pot of John inner porting compost No. 1
- When the plant has filled the pot with roots, repot into a 6-in, pot of John Innes putting compost No. 2

well out-of-doors only in countries with mild winters, and in the British Isles it is grown under glass.

GREENHOUSE CONDITIONS

If perpetual-flowering carnations are to be grown on a large scale, the plants are best grown in concrete-lined beds and carefully prepared soil. More often, however, they are grown in pots.

These carnations will grow in any greenhouse that is large and airy and safe from frost. There should be a space of at least 2½ ft. between the staging and the sloping glass.

Although they need considerable care in cultivation, perpetual-flowering carnations should never be coddled. Once the plants have rooted, the night temperature can be as low as 45° F. (7° C.), or somewhat higher if full winter blooming is required. Although this will tend to rise considerably during the daytime, avoid high temperatures, which will cause soft growth and make the plants liable to disease.

A buoyant atmosphere is essential for these plants, and while some heat will be needed from September to April, it may also be necessary to leave the ventilators open all the year round. Only in really cold winter weather is it advisable to close ventilators in the afternoon, and leave them shut until the following morning.

Some shading will be needed if perpetual-flowering carnations are kept under glass during the summer months, and the greenhouse should be damped down regularly. Shading can be discarded in October, even if the weather is sunny, but be sure to continue giving plenty of ventilation.

PROPAGATION

The perpetual-flowering carnation is propagated by cuttings taken from a healthy, sturdy plant, The propagating season can be said to last from November till March, but the ideal time to root cuttings is in December, so that they will be ready for potting up during the early spring, and can, if desired, be placed outside in frames during the summer. They will then flower during the following winter.

Cuttings should be taken just below a joint; they should be about 4 in. long and have four fully developed leaves. With a sharp knife, trim off the short curly leaves at the base of the cutting for about ‡ in., so that no leaves touch the sand when the cutting is planted. Do not allow the cuttings to remain exposed to the air, but insert them immediately in the propagating sand.

Fill a propagating pan or 4-in, pot with a layer of broken crocks, covered by about 2 in. of pure silver sand, or washed and crushed river sand, insert the cuttings into the sand \(\frac{1}{4}\) in. deep, so that they stand upright and 2 in. apart. Take care not to bury the base of any leaves. If using the same pot again and again, use fresh sand for each batch of cuttings, or they may fail to root.

Place the pots where they will receive rising heat; at this stage the temperature of the greenhouse should be somewhat higher than usual—approximately 55° F. (13° C.).

POTTING

The cuttings should root within 28 days, and should immediately be potted individually into 3-in. pots, using John Innes potting compost No. 1. Do not pot too deeply, and water immediately.

When these pots are filled with roots, pot up each carnation into a 6-in. pot, this time using John Innes potting compost No. 2. First give the pot a good base of broken crocks, and pile the compost over this in a mound; then place the plant's ball of roots on this mound, with

the top of the ball \(\frac{1}{2}\) in, below the top of the pot. Pack more compost round the ball of soil and, most important, press it down firmly. Carnations should be staked at this stage to encourage the stems to grow straight.

Place the pots on a bench covered with ashes, leaving about \(\frac{1}{2} \) in, between each pot. The plants may also, if desired, be stood out-of-doors in a cold frame from May until September in southern districts, or until about mid-August in districts farther north.

STOPPING AND DISBURDING

When the carnations are about 10 in. tall, they should be stopped to encourage the growth of flowering shoots near the base



DISBUDDING PERPETUAL-FLOWERING CARNATIONS

When the buds are about the size of a pea, remove them all except for one at the top of the main stem. left: correct growth stage for disbudding. Centre: disbudded growth. Right: The flowering stem of a perpetual carnation should be supported. Insert a cane close to each stem and secure with a ring tle. Raise the tie as the shoot grows.

STOPPING PERPETUAL-FLOWERING CARNATIONS



- 1. A plant ready for first stopping. Snap off about 3 in. of the growing point
- 2. The same plant showing the side shoots resulting from the first stopping
- The final stopping should be made when the side shoots are about 7 in. long. Remove the tips of about half of them

of the plant. Snap off about 3 in. of the growing point of the plant. Half the laterals should also be stopped when they reach a length of about 7 in., leaving the others to grow on to flower. Stopping should end by September at the latest for winter-flowering carnations.

The method of stopping described here will vary according to the time of year when the carnations are planted and when they are to be brought into flower. In general, however, a carnation will flower about five or six months after stopping has ended.

Remove all small secondary flower buds to encourage the growth of long stems and larger blooms.

WATERING AND FEEDING

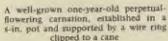
Water the plants very sparingly in the winter, but give rather more water in the spring. Even in summer, water only when the plants really need it, since over-watering can have fatal results.

Syringe the plants every evening in the summer to prevent attacks by red spider.

Perpetual-flowering carnations need no feeding for the first six months. Thereafter they may be fed with special carnation fertilizer, used in accordance with the manufacturer's directions.

SECOND AND THIRD YEARS

If the carnations are to be kept for a second year they should be transferred to



8- or to-in. pots as early as possible, and no later than about June of the first year. Continue feeding and cultivation as before. By the end of the second season the blooms are usually considerably smaller, and although the plants may be kept for a third year, they should then be discarded.

RECOMMENDED VARIETIES

The following varieties of perpetualflowering carnation are not difficult to grow and give good results in pots:

Allwood's Crimson, large, crimson, heavy cropping.

Ancient Rose, deep rose-pink shading to bronze at the edges.

Canadian Pink, short, rose-pink.

Canadian White, short and stocky, snow-white.

Doris Allwood, salmon-rose, good scent.

Fragrant Ann, pure white, scented.

Golden Rain, clear yellow, freeflowering.

Monty's Pink, pink, scented, disease resistant.

Titian, short, crimson, a good grower.



Flower Arrangement

CONDENSED FROM THE WOLKS OF CONSTANCE SPRT

"Flowers in a room have a quality in common with the presence of people, or of a fire. They bring the room to life, make it look lived in. The eye leaps to a vase of flowers, leaps to something living and colourful . . . and if, on nearer view, you find beauty of line, detail, volour hlending and satisfying balance, your pleasure is so much the greater."

The outline of any flower group is influenced by the shape of the vase. I find the simplest way to get the outline clear is to place in position two or three flowers to indicate the general shape, putting in first the highest central flower and then the two sides; or, for a cornucopia or sauce boat, putting the highest and lowest flowers; or, for a centrepiece on a table, to fix the total length; then, within this framework, to build up the whole.

Proportion is all important. If the flowers are too wide, too low or too high for the vase, the effect will never be good. Generally speaking, choose flowers that are one and a half times the height of your vase. But always be chary of shortening the stems of the flowers. Wherever it is possible to achieve the desired variations in height by pushing the stem farther into the vase, do so rather than chop off a piece.

There are several reasons for this. In the first place the stem seems to take on a more natural, flowing line. Secondly, it is more likely to remain permanently below the water line. And thirdly, you cannot put the stem on again if, by chance, you change your mind.





Soft and malleable stems may be induced to take on the required curve by very gentle massage—arum lilies are a case in point.

I feel that in advocating the removal of the leaves from most flowers, I risk criticism. But there is one very good argument for doing it—even apart from the fact that it helps to preserve certain flowers. It is this: one may get a perfect nostalgia during the winter for the sight of a lilac tree, remembering it as a great plume of scented flowers. But when the time of flowering comes, and you pick a bunch and put it in water just as it comes from the bush, does it not fall short of your winter dream of what lilac should be?

If I am right, then try picking a great deal more lilac and taking off the leaves. Fill your vase very full of its branches, and you will recapture your dream. Try the same experiment with crab-apple and cherry blossom.

But flowers with dramatic whiteness, such as magnolias, camellias, gloxinias



and gardenias, look best with their own leaves.

The most generally useful hint in flower arrangement, I think, is this—try to recapture something of the essential quality of the flower, or of the effect it gives when growing.

For instance, the sweet rocket is a mass of clean white flowers, and its vision in the garden is of massed white. If I pick a dozen or two long stems and put them in a tall vase, I lose something of this effect. So I prefer to cut rather short stems and

crowd them into low containers. In this way I keep that sense of massed whiteness, BACKGROUND

The simpler the background, the more clearly will the character of the arrangement be seen. I like best of all a whitewashed wall, against which every quality of colour and line stands out.

Busy, ornamented backgrounds are a handicap. They detract from the effect of the flowers. Where they exist and cannot be altered, you might like to choose a permanent spot in the room for your

FLOWER ARRANGEMENT



Old vases of unusual shape can be used effectively if the arrangement is made in proportion to the container. This small vase holds brownish-purple and greenish-white hellebores bossed with golden stamens.

flowers and hang a piece of fabric or parchment as a background, or use a mirror.

On the whole, flowers are seen to their best advantage set against an opaque background, with the light shining on them.

A mixed group of flowers when set against light may look confused. However, flowers with particularly translucent petals, such as single Shirley or Iceland poppies, bluebells and willowherb, look charming against the light of a window.

THE USE OF COLOUR

Try anything once. If you don'r, if, for instance, you say: 'I don't like red, or yellow, or orange" and leave these colours out of your flower adventures, you are losing something and in the end are so much the poorer.

Remember that if you are trying to achieve a strong note of colour, of red or orange perhaps, the incidence of green will detract from the brilliance of the result. Green, a lovely colour in itself, has the effect of cooling down other colours.

Suppose that in a dull or cold room you choose to make a pool of golden marigolds; you will heighten the brilliance of the effect by the degree to which you dispense with their leaves, though you may strengthen the effect of colour and warmth by the addition of coloured leaves.

RED

If you want to achieve a brilliant note of red in a room, perhaps on a cold day, or perhaps to pick up a note of red in a picture, it is possible to get brilliance without harshness by putting together many shades and tones of red, rose, vermilion, crimson, magenta and make a strong, warm effect.

The crashing together of reds may seem frightening at first. But the combination of, say, azalea flame, the orange of strelitzias and red and pink rhododendrons, can produce a glorious torch of colour.

Red flowers look well against walls of pale grey, or egg-shell blue, and, of course, against white. Clear magenta flowers like the wild willowherb are beautiful against pale yellow, so are most mauve, purple and wine-coloured flowers.

BLUE

This is not usually a colour that lights up well on its own—it tends to look grey. Blue, mauve and blue-pink or magenta together, however, light up well and, together with purple, look particularly fine in silver or pewter vases.

When these colours occur in flowers like hydrangeas, Michaelmas daisies or petunias, they are helped by reflected light from a polished surface.

GREEN

It sometimes comes that, after a feast of colour, one longs for the coolness of green. I confess I turn again and again to all-green groups.

The flowers of the common oak picked before the leaves unfold, and a branch of horse-chestnut—soft lime-green oak flowers, deeper green chestnut leaves and cream chestnut flowers, all in a pale, shining brass bowl—make a quiet-toned picture.

So do the green flowers of spring lords and ladies, or wild arums, green hellebores and a lovely, grey-green, bellshaped flower called ornithogalum, Star of Bethlehem, which is as easy to grow as a bluebell.

So often leaves are looked on as material of secondary importance, but they are lovely used by themselves. All through the winter I have vases of ivy in my room—lovely, shining, elegant leaves, unmixed with flowers, delighting the eye. Laurel is another fine evergreen for decoration used by itself, grandly, and



not as a sort of stuffing for a few large chrysanthemums.

WHITE

FLOWER ARRANGEMENT

A striking but formal effect for a delicate filigree vase can be obtained by grouping together water tilly flowers with their buds and leaves, and sur-

rounding them with flowers, ferms and seed heads. Keep the surround light, so as not to

detract from the strength of the water lilies

Rightly used and placed, white flowers are not cold, they are a high-light—delicately shot through with tinted light and reflecting the colour surrounding them.

If you feel prejudiced against white flowers, I would suggest that before shutting your mind to their appeal, you might set white tulips or poppies against a delicate wall where strong light falls on them—and look at white flowers with new and considering eyes.

MIXED COLOURS

One gets a better and less fussy effect by introducing different colours in broad strokes, rather than in spots. For example, in a bowl of mixed tulips or sweet peas, flowers of one colour, used in proximity, give a cleaner effect than if they are dotted about in ones and twos. And in the case of mixed flowers, two or three flowers of one kind against two or three of another may give a better effect than if they are put in in units.

MASS.

Contrast of colour is, perhaps, more generally considered than contrast of mass. But on this point there is much to be learned from the still-life master-pieces of the old Dutch and Flemish painters. They grouped together massive fruit and flowers, delicate ears of corn, tendrils of vine, and fine grasses.

We can copy them, putting perhaps a delicate frond of fern against a bold leaf, and so making a contrast of mass and texture. Or we can use fruit, as they so often did, to give weight to the composition. (See illustration on page 962.)

Never be afraid of being laughed at 1 was once nearly deterred—by fear of ridicule—from using some particularly beautiful red cabbage leaves with red and grey eucalyptus.

Fortunately, I took courage, and nobody laughed at the result.

THE VASE CUPBOARD

The contents of the vase cupboard are of primary importance to anyone interested in flower arrangement. A small range of stereotyped vases is stultifying; what may be a suitable container for the sweet, morning freshness of a spring bunch, will not necessarily be so for the rich glory of autumn.

As far as the shape of vases is concerned, I prefer an oval vase to a round one—it is easier to arrange well. A boatshaped vase is good on a chimney piece or a window-sill. A chalice or gobletshaped container gives scope for a graceful, down-curving line.

A wall vase has much to recommend it. It does not need so many flowers, for one thing, because every stem is silhouetted against the wall and made the most of. Fastened to the wall it will not overturn and can, therefore, carry spreading branches of some weight.

I have seen copper measures cut in two and used this way, and even an old, brass tinder-box filled with honeysuckle—this sort of wall vase is ideal for trailed climbing plants, or sprays of drooping berries.

I have even used a flat-backed bicycle basket on a wall, filled with jam pots of water, and coloured to match the simple flowers I put in it.

Picking the right vase for the right occasion is a question of thought, ingenuity and the seeing eye, rather than expenditure of money. Of course, the possession of one or two beautiful vases is a help, but it is a mistake to work even one's most valued possessions to death.

GLASS

Generally speaking, glass vases are best reserved for a few, clean-stemmed flowers such as long-stemmed roses, a branch of magnolia and gardenias. Indeed, in such cases the stems, magnified by the water, may be decorative in themselves.

But glass can be debased by careless use. How often one sees a transparent glass vase showing a confusion of stems in discoloured water, with a still more discoloured sediment at the bottom. Glass Stiff and gnarled branches of magnolia rise picturesquely from a marble bowl. The flowers are borne on the leaders branches and, provided they are not bruised or frosted, will last for some time

vases should be shining, scrupulously clean. A few drops of ammonia will sometimes remove the stains of old water.

CHINA

One of the pleasures of possessing even a small bit of decorative china, such as Dresden or Rockingham, is that, from time to time, one may find exactly the right flowers to fill it—the moss rose buds, lily-of-the-valley, miniature pansies, and all the rest of the flowers which inspired the creators of such pieces.

EARTHENWARE

Jars, pitchers and honeypots in unglazed earthenware are inexpensive and often of good shape, holding plenty of water. If their colour is not suitable they may be painted with pale-coloured distempers. Personally, I do not like the effect of shiny oil paints.

METAL

Jugs, urns, bowls and preserving pans of good shape in copper, brass, pewter and tin make most satisfactory vases. Heavy in weight and generally holding plenty of water, they form a secure base for spreading arrangements and larger flowers.

Some flowers, like zinnias, foxgloves and columbines, often look disappointing in a pottery vase, but transfer them to a polished metal container and they come to life.

A vase cupboard may well house a few ordinary kitchen tins-bread, cake and baking tins, which have probably been many times in a hot oven and taken on a fine surface. These sort of shallow tins are indispensable for long-spreading decorations, such as one might want for a party.

WOOD

Wooden vases as such are not very often seen nowadaya, although the material is a natural complement to flowers. There are, however, many possible substitutes. Knife boxes, cheese moulds and milk bowls, all fitted with metal linings, are very useful.

FLOWER ROLDERS

I have yet to find anything which anwers the purpose of a flower holder better than crumpled-up wire netting.

The tendency of a beginner is to choose a small mesh netting, but when small netting is crumpled up it is difficult, almost impossible, to insert thick stems without mangling them. A mesh of 13 to 2 in. is best; for this, provided it is of thin quality, will secure a stem at any angle required. For a shallow bowl, it may be necessary to tie the wire in with string, like a parcel. After the flowers are arranged, the string may be cut away. Glass domes, used by themselves, are apt to give the flowers a pins-in-a-pincushion effect, but they may well be used with wire netting.





FAVOURITES FOR SPRING

There is one flower that I think is the very pride of spring—the crown imperial, or Fritillaria imperials. From the moment it first pierces the earth, it is dramatic . . . the drama continues until at last the beautiful and curious bells unfold, and you may see inside the five, clear tear-drops which lie at the base of the petals.

I use the crown imperial in mixed groups as well as alone or with shapely branches. I am sometimes asked if I am deterred from using it by its curious smell. I am not, because I find that when the flowers are placed in water, this is not obtrusive.

Personally, I do not dislike the earthy smell of the crown imperial.

BAFFODIES

The paler daffodils should not, I feel, be arranged with stronger-coloured kinds. They need to be arranged simply. Curglass bowls and the like seem out of keeping. Moss-carpeted baskets, simple dishes and wooden bowls please me better.

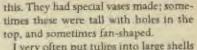
One of my favourites is Nacious triandrus albus, the angel's tears daffodil, with its milk-white flowers borne on +in. stems, It is surprising how the dignity and grace of so tiny a flower will stand out in quite a large room.

The miniature daffodils are properly regarded as rock plants, but, fortunately, readily adapt themselves to being grown in pots or pans.

THESES

Long-stemmed tulips are magnificent flowers to arrange, but I do not like to see the quality of their line, stem and dignity of form left unconsidered.

For instance, if you take a bunch of tulips and stick them in a trumpetshaped vase, you have done little to help display their essential qualities. Long ago the people in Holland understood



I very often put tulips into large shells or shell-shaped vases, to let the curve of their stems be seen to full advantage.

It is helpful to have some of the very deep-toned tulips for decoration, like Bacchus (a dark, plum colour), Frans Hals (a deep purple) and The Bishop (a fine bluish-purple.)

Such a selection as these, with some soft pinks and such of the stronger reds as your fancy dictates, give you marvellous material for decorations.

FAVOURITES FOR SUMMER

Should your mind run, one summer's day, to the richness of purples and lilac, burgundy and amaranth, cramosy, ruby and garnet, you can—with a basketful of old roses—create such a cascading symphony of colour.

For us, who love and collect them, the term "old roses" means primarily the gallicas, the damasks, the mosses and the albas. They are my precious hobby-horse. I should like to persuade everyone with a garden to grow some of the old-fashioned roses. They have perfection in colour and shape on the one hand, romance and indescribable scent on the other.

These are not the kind of roses that you can arrange in tall vases. You can either cut short stems and mass them in bowls, or you can pick long, heavily-flowered branches.

Old roses are essentially summer flowers, for they have no second annual bloom. Also they have no yellow colouring at all. The comforting thing is that you may cut them at will without doing any harm. Cutting them is, at worst, a slight reduction of the richness; at best, a gentle pruning.

The finest of the damask roses is, to



my mind, Madame Hardy, a large, pure white, fragrant rose showing, when fully open, a pale green eye. Of the French roses. Cardinal de Richeheu has a sombre and exotic richness. Of the moss, leanne de Montfort and Nuits de Young are beautiful

But keep plenty of room in your heart for the common moss rose. This is a poor name for it-for this is the rose that inspired the composers of valentines and the decorators of china long ago. It has slender, beautiful buds which open to the prettiest of pink flowers, and the seent is ravishing.

PHILADELPHUS

Summer comes for me, whatever the official date may be, with the first, flowerladen bushes of mock orange. The scent, the grace, the lavishness of this flower tell the glory of summer. It should be arranged in high, wide and glorious profusion.

Almost anyone can grow this shrub. It will grow and flower in a town yard. and you may pick it freely, without fear that you are stealing years of growth. A very fine variety is Virginal, some say one of the finest of the hardy shrubs, bearing quantities of delicately scented, double, white flowers and flowering in late June or early July.

FAVOURITES FOR AUTUMN

This time of year has its own intrinsic beauties; the magic of a frosty morning, the grandeur of a leafless tree and the smell of wood smoke. The garden, though now beginning to look sleepy, may still be a source of autumn ideas. A few late fruits of crab-apple, seed heads and late flowers may prove an inspira-

trasts of form made by the inclusion of berries and fruits in flower arrangements, afford limitless possibilities; provided.

of course, that such an association is pleasant and not incongruous. Sometimes one sees fruit arranged with flowers in a way that seems forced rather than natural. Grapes with evergreens, for example, or with daffodds or any spring flowers can seem unsympathetic and irrelevant.

In the illustration on this page berries predominate-with the scarlet of the common mountain ash contrasting with the white snowberries of the symphoncarpos. This is a wonderful shrub, incidentally, and an acquisition to the flower arranger.

In October and November, over-

tones of richness in flower atrangement can be caught by

combining plants from the

hedgerows with some from the

garden. In this group, plants of the hodgerow predominate, with

warlet mountain usb, conw-

berries, dried bracken and wild clemana but the bold effect is

provided by garden plants-

white berries of the Chinese. repain, five tawny vellow fruits

of Japonica, two egg-shaped

fram of the tree tomam and a

traff of outdoor vine.



tion for a flower and fruit group. The valuable, and often dramatic, con-



FLOWER ARRANGEMENT

Together with dried bracken, vine leaves and the fallen brown leaves of the Himalayan rhododendron, the berries made a pleasant arrangement. But it was not until the fruits were added at the base that the result became satisfying. There are five tawny-yellow fruits from the japonica, two egg-shaped fruits of the tree tomato and a trail of charming outdoor vine.

The japonica fruits came from a plant of Chanomeles japonica. The tree tomato (Cyphomundra betacea) is not a garden plant and, although ours stays out all summer in its wooden tub, in winter it is brought into a warm glasshouse, it may be grown from seed in warmth, and flowers in its second year. Our plant grew readily from cuttings.

The vine is Vitis unifera purpuses, its already wine-red leaves take on, in autumn, even richer tints of purple and the tightlypacked bunches of dark grapes add a wonderful quality to this plant. It is a slow grower, but well worth waiting for. CHRYSANTHEMUMS

I like best to see a limited number of blooms set in a well-considered background of material which emphasizes their beauty. For this purpose there is a whole range of colourings to be derived from plants like eucalyptus, New Zealand flax (Phorman 1900), the bare branches of red dogwood, dramatic branches of elm, black-budded grey-stemmed ash and the incense plant (Human elegans).

From these and other subjects it is possible to construct a fine framework for three or five flowers which, given the proper preliminary treatment and continually replenished with water, will last for weeks.

FAVOURITES FOR WINTER

I would not miss the country in winter for anything. The shapes of the trees are more lovely now than when they were

hidden by foliage. The cold, sharp air is exhilarating... and there is quite enough of leaf and flower to keep tresh the vision of spring.

Indoors, in the summer, the group of evergreens shown on the previous page would be too heavy. But during the lean days of flowers, I find that if I can have a good-sized vase filled with green things to give a sense of aliveness to the room, I am satisfied.

In this arrangement are to be found Mahonia japonica. New Zealand flax or Phornium tenox, and sprays of a charming cypress, Capresus arisonica glazza. The grey of the latter is caught up again in the whitish buds of Eucolyptus globulus.

The phormiums are wonderful, strong swords of growth, grey-green and purplish in colour. They last for weeks in water. They are not really rapid growers, though in warm and sheltered gardens they may develop more freely.

HELLEBORES

All the hellebores have a name for being indifferent lasters when cut. But in this I think they are maligned; they will last well—as much as two weeks sometimes—if they are watched and cared for.

Picked from the garden or bought from the shop, split the tips of the stems and put the flowers straight into deep, warm water in a cool place, for all of twelve hours. Keep a watchful eye on them after that, and if any flower shows sign of flagging, remove it, resplit the stem and put it back into deep water in a cool place until it recovers. Their beauty is well worth the trouble.

To grow, hellebores are on the whole accommodating plants. They appreciate a well-drained, well-enriched soil, and an annual mulch of rotted manure or leaf soil and protection from herce sun and strong wind. But with me, they grow in a not very well-drained clay—and the clumps have increased to a large size.

SNOWDROPS

Clumps of the loved Galanthus nimits, which the unbotanical among us call the "ordinary" snowdrop, are a delight when seen in a vast carpeting under the bare winter branches of the woodland. But don't let this vision blind you, as it did me for too long, to the possibilities of snowdrops for arrangements.

Take, for instance, four of five flowers of the slender-stemmed G. elwesi, with one or two of its broad, grey leaves, and pose them in a small, shallow, saucer-shaped container. Put each flower apart, so their entire form may be seen. Then

FLOWER ARRANGEMENT

you may have—in miniature—all the elegance of a lily and the swinging grace of a fritillary.

The bulbs of this flower are not inexpensive. But when grown properly, they increase and multiply well.

PARTY FLOWERS

Whether a party be for two or two hundred . . . flowers heighten the note of gaiety, provide a thrill for the senses, give an added touch of excitement, so that the occasion may be a notable memory.

Clearly, for a party you want flowers to be seen to advantage, but not in danger of being crushed.

In a drawing-room the obvious position of advantage is the chimney-piece. The whole shelf should be cleared and a really effective flower arrangement put there. If it is well done, you may find that nothing more is needed in the room.

In a small room, the value of wall vases comes in. I sometimes hang these so that the vase is in the centre of a very large mirror. In this way, one gets good reflections which add to the effect.

One of the prettiest out-of-the-way decorations can be made by using wide sun-hats suspended on ribbons. The hat must be firmly secured, otherwise the water, which is contained in a tin in the crown of the hat, would spill. The flowers are arranged so as to flow out from the sides of the hat. Well carried out, the whole effect is light and gay; it is economical too.

Simple and effective, too, are hanging baskets of cow parsley. For this, fit a basket with cake-tins of water, as this wild flower is a thirsty subject. Pick it two days before the party, put it straight into deep warm water and then, stem by stem, remove almost all the leaves.

FOR DINNER PARTIES

It is best to have low arrangements of flowers on the table. One of my favourites is an oval garland of old roses laid round the centre of the table. The roses are picked on short stems early in the day and put in bowls of water in a cool place. Shortly before dinner they are taken out, dried, and laid on a thick oval garland on the cloth. You may protect the cloth with strips of wax paper, if you wish.

FOR CHRISTMAS

You might like to try a table arrangement that, once made, can be put by and used from year to year.

A piece of tarlatan or organdic covers the centre of the table. In the middle are two big posies of holly and mistletoe, which are surrounded first with circles of stiff muslin, and then with a paper posy frill. This frill can easily be contrived with silver doilies. The candles are fixed in little patty-pans with cement and obscured by leaves and berries.

The oval garland is of holly leaves, cut out of ribbon which is stiffened by being brushed over at the back with a thin solution of gum arabic. The leaves are cut in two pieces. By fixing the halves slightly apart, they appear to have a central vein, which is, of course, the white tarlatan appearing through the gap. The berries, made out of stiffened red satin ribbon, are punched out with a leather punch.

POT PLANTS

Perhaps it is the fault of the Victorians that we in England make so little use of the graceful, beautiful ivy. They trailed it round windows, doors and even settees... but we have had time to recover from the surfeit. We might well use it far more in all its forms.

It is not always easy to find an effective way of using pot plants indoors. Set on a table they often look out of proportion, and the question of suitable containers is always a problem. When, however, they

FLOWER ARRANGEMENT





A low fluted glass jar will offset a mixture of moss roses and geranium heads. Add a spray or two of forget-me-not by way of contrast

are arranged on the floor or on low stools, they can be put in shallow baskets or zinc-lined wooden trays. Then, as one looks down on them, one sees plant without an undue proportion of container—not always the case when they are arranged at a higher level.

IVIES

A good group of variegated ivies is Hedera canariensis foliis variegatis, with large leaves beautifully marked in cream and green; and the smaller-leaved H. helix Glacier with white-margined, silvery-grey leaves. Being variegated, these plants need to be in a clearer light than others with entirely green leaves.

For a position with less light, there is nothing prettier than the small-leaved H. kelix Chicago. Put it where it can be allowed to cascade, with all its grace and vigour. It grows readily and likes reasonable moisture.

Sparmamia africana (African hemp): This is one of those obliging plants which, if treated reasonably, will flourish permanently indoors. It will grow to as much as 6 or 8 ft. in height and bears large pale green leaves and, now and then, will even produce delicate white flowers.

All through the long and cold winter, I have a group of foliage plants set apart on a small, low table. It has proved an effective and economical means of making the room look alive.

The top of the table is protected by a tray, fitted with a specially-cut, thin sheet of metal. Pot holders and empty, upturned plant pots were used to give variations in height, so that the whole outline was graceful.

The plants used included a tall Monsteru deliciosa horsigiana, Scindopsus aureus, Philodendron scandens, Hedera canariensis fellis variegatis, a dark red Begonia rex, a silvery-leaved scented geranium (Pelargonium crispum variegamm), trailing ivy and tradescantias.

The whole effect was lightened and enhanced by a trick. Among the plants I concealed a tallish glass vase, and towards the front I concealed a jam pot. In these two containers I put a few cut tulips, a few stems of clivia-whatever suitable cut flowers came my way.

FIRST AID FOR FLOWERS

What there is to say about this, might well be written in Catherine wheels of fireor emphasized by any known device that might make it register.

Beginners, particularly, are negligent about the matter of filling up vases-to me a sin in the category of forgetting to fill up the drinking trough of a canary.

Here then is the drill: As soon as the flowers are arranged, the vase should be filled to the brim. If the vase is a capacious one, the water will probably not need replenishing till the next day. But shallow or over-full vases should be inspected a few hours after being arranged. After that, water should be added up to the brim each day. In cold weather, warm water may be used.

All cut flowers should be protected from draughts and kept as far as is reasonably possible from radiators and fires,

especially gas and electric ones.

I find that with nearly all flowers it is best to cut them the day before they are required. If they are then put into deep bowls of water in a cool place, it enables them to absorb a good deal of water before they are exposed to handling and warm rooms.

Just after they are picked, and before they are put into water, flowers must be treated according to their needs:

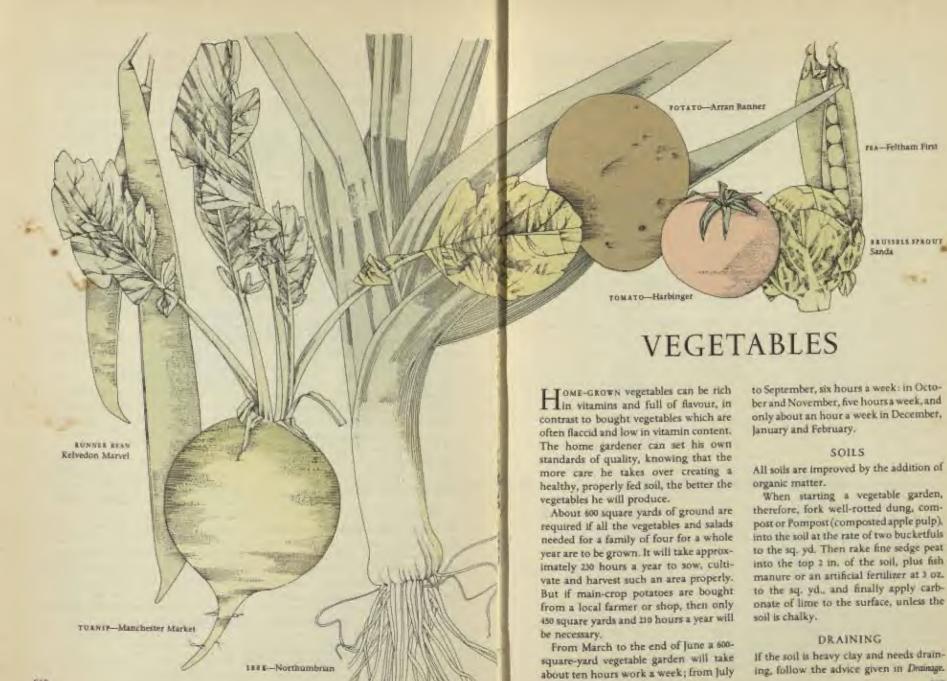
Hard-wooded plants must be enabled to absorb enough water to keep alive, so peel or crush the tips of their stems, or split them for three or four inches. This applies in particular to fruit blossoms and lilac.

Soft-wooded stems, such as poppies and dahlias, may be sealed up by dipping their tips into boiling water for a few seconds. I have seen bluebells, treated this way, last a week.

Some flowers, like mignonette and stocks, foul the water quickly. So remove any leaf which touches the water, and put a lump of charcoal into the vase.

Wild flowers should be picked in bud, carefully rolled in newspaper, then revived in hot water and given a night in a cool, dark place."

An alternative is to put the flowers in a polythene bag as soon as they are picked, in this way they will remain fresh. Ed.



FIRST TEAR	Pees Beana Gelny Lette Lettuces Spinach Tomatoes Onions	Carrota Beefroots Sweden Paranips Potalbes Turnips	Cabbages Brassets aprouts Broccoli Caul Rowers Rela
FERTILIZERS	Compost	Furtilizer	Compost
TO USE	Fartilizer	Lime	Lime
SECOND YEAR	Cabbages Brussels epicuts Broccoll Cauliflowers Kale	Peas Beans Calory Less Lethues Spirech fomatoes Onspire	Carreta Bestroate Swedes Parcinips Polatore Turnips
FERTILIZERS	Compost	Compost	Fertilizar
TO USE	Lime	Fertilizer	Lims
THIRD YEAR	Carreta Bestroota Swedes Paranies Poistura Turnips	Cabbages Brussels tarouts Brocceli Cauliflowers Kahi	Paga Beans Celery Lerké Leftvost Spinach Tamatoes Ombria
FERTILIZERS	Fortill sed	Compact	Composi
TO USE	Lims	Lime	Fertilizar

A THREE-YEAR ROTATION PLAN A plan for the smaller garden. Any form of crop rotation reduces the incidence of soil-borne diseases and pests

CROP ROTATION

Ground which is repeatedly used for growing vegetables of the same nature deteriorates after a few seasons. A rotation system, which changes the use of the land each year, is good for both the soil and the crops. One crop can leave the ground in a better condition for another, because of the feeding it has received and because of the useful elements it may have left in the soil. Also, some plants excrete toxins which can accumulate and become harmful to that crop but not to

others. A rotation system ensures a regular working of the land in a systematic manner, and balanced feeding for the soil, as each section will be given manure, lime or fertilizer in turn. Any form of rotation also reduces the incidence of soil-borne pests and diseases.

For a simple rotation system, divide the vegetable garden into four equal plots. In the first year, one part might be used for members of the cabbage family (brassicas), the second for potatoes, the third for root crops and the fourth for

VEGETABLES

FIRST YEAR	Capeages Frussels sprouts Cauliflowers Kale Frussels Turnibe Lettucas Sarrys	Early potatoes Main-grap potatoes Onlone Calery Leaks	Carrots Beetrocts Shaltets Salarly Chicory Parsnips Swedes	Peas Broad beens Owarf beans Rymar beans Tomatoes Spinach
FERTILIZERS TO USE	Compost Manure Lime	Compost Mariure Fish manure	Fresh máthura	Composi Manura Fish manure Wood ash
SECOND YEAR	Peas Broad beans Dwarf beans Remost seens Tamadose Spinach	Caobegns Brussels sorouts Cayliflowers Kala Broccols Turnips Lettuces Savors	Early politions Main-crop positions Onepus Celery Leaks	Carrotz Bestroom Snallote Salally Chicory Paranism Swadies
FERTILIZERS. TO USE	Composi Manure Fish mamire Wood ash	Compost Manura Ume	Compast Mariana Flan manure	Fish manute
THIRD YEAR	Carrota Beetrools Shally U Salally Chicory Parsniss Swedee	Pean Broad bears Owarf bears Runner bears Tomation Spanich	Cabbages Brussels sprains Cauliflowers Rafe Brocces Turnips Latitaces Salend	Early polatives Main-tent obtators General Calery Lineke
FERTILIZERS TO USE	Figh minure	Composit Mariura Flah manura Wood zah	Compact Madure Lime	Composi Manus Fosh manure
HTRUGE RASY	Early pointoes Anin-crop pointoes Onions Celery Lowes	Carrots Bestrocta Snation Satary Chicary Paranica Swellen	Pers Broad Searce Dwarf bears Runner bears Formators Spiritory	Exemple sprints Cautiflowers Kain Brackel Turnipa Leffoces Sawan
FERTOIZERS TO USE	Compost Mahurn Fish mpnuru	Frakt manusnis	Composi Manura From manura Would ask	Compret Marters Limb

A FOUR-YEAR ROTATION PLAN This plan ensures that no type of vegetable is grown on any plot more than once in four years peas and beans. Annual rotation will then mean that no class or type of vegetable is grown on any one area of ground more than once in four years.

In small gardens a three-course rotation will give similar benefits.

CATCH CROPS

A vegetable crop grown between the harvesting of one main crop and the planting of another is known as a "catch crop". Leeks, for instance, are not ready to be planted out until June, and the site could be sown with a catch-crop of broad beans in November for harvesting in June before the ground is needed for the leeks.

Quick-growing crops, such as lettuce, spinach and radish, are usually grown as catch crops. If sprouting broccoli, which is harvested in March, is to be followed by runner beans (which cannot be sown until the soil is warm, in late April or early May) the ground can be cropped with lettuces, radishes or spinach. But always be sure to sow a crop which is quite certain to be ready for harvesting before the main crop should be put out.

Catch crops can also be sown at the same time as parsnips and parsley which are both very slow to germinate. The catch crop will have the added advantage of marking the position of the rows for hoeing.

INTER-CROPS

A crop grown between the rows of another is known as an inter-crop. If winter lettuces are planted out in October as an inter-crop, broad bean seeds can be dibbled between them in November. Broad beans may also be sown as an inter-crop with early potatoes. The beans get away earlier than the potatoes and, because they grow upright, do not interfere with the tuberous crop.

The ridges formed by digging out celery trenches can also be used for inter-crops. On the top of these ridges sow the seed of lettuces, french beans or radishes. These can all be harvested before the soil is needed for earthing up the celery itself.

SOWING

PREPARATION OF THE SEED RED

Seeds need to be sown in firm soil. Start by forking over the bed about 3 in. deep, adding one bucketful of fine sedge peat to the square yard to supply organic matter and moisture to the roots of the seedlings after they start to grow. Tread the land over to break up the lumps of soil and make it firm. Then rake the top inch of surface soil backward and forward until every particle is finer than a grain of wheat, and the surface is level.

If the soil is very lumpy, it may be necessary to repeat the treading and raking. But the process is effective only when the soil is dry and crumbly. After rain, wait until the soil dries out again sufficiently for the work of "pulverizing" to be continued.

QUANTITY OF SEED

Many gardeners sow far too much seed. In a ½ oz. of parsley, for instance, there are nearly 4,000 seeds; as one plant can easily grow 1 ft. across, ½ oz. of seed could sow a row 4,000 ft. long. Follow the instructions given for individual vegetables.

SEED SOWING

Grow the vegetables in rows because it is then easier to keep down the weeds with a hoe.

The depth of the drill will depend on the size of the seed—the smaller the seed the shallower the drill, and the heavier the soil the shallower the drill. In average soils, drills ½ in. deep suit the seeds of carrots, lettuce and parsley; 1-in. deep drills suit beetroot, spinach and swedes; drills 3 in. deep suit peas and beans.

STATION SOWING

Instead of wasting seed by trying to sprinkle it evenly and thinly along the drill, it is better in some cases to sow three seeds at each of the spots or stations



MAKING A DRILL The depth of the drill depends on the size of the seed. Vegetables are grown in rows to save space and labour

where the plants are to grow. For instance, if beetroot are to be grown 4 in. apart in the rows, place the seeds at stations 4 in. apart along the drills; then, later on, if all the seeds germinate, the seedlings can be thinned down to one per station.

The saving of seed is enormous. It is possible to buy a packet containing 1,500 seeds of James' Scarlet Intermediate carrot for a few pence. If as many as five seeds are sown at stations 5 in, apart along the drill, the one packet will suffice for 300 stations in a row 125 ft, long.

SEED SELECTION

When buying seed the strain should be taken into account. A high-quality strain is the result of saving seed from plants of particular merit—some experts consider that strain is often more important than variety. It is therefore important to buy from a reliable seedsman who has taken trouble over selection. As some seedsmen tend to specialize in particular groups, it may be advisable to buy the



STATION SOWING Sow a number of seeds at regular intervals and later, if all the seeds germinate, thin the seedlings to one per station

seeds of peas and beans from one firm, seeds of the cabbage family from another firm, and the seeds of root crops from a third. Always be prepared to pay a good price for good seed. It is well worth it.

TREATING THE SEED

Seeds are often attacked by spores of a soil-borne fungus which kills them just as they are germinating. This is usually called pre-emergence rot, but can be due to various fungi. The trouble is more common in heavy soils than in light ones and occurs frequently when seeds are sown in moist soil, especially in the autumn or very early spring. Before sowing, treat the seeds with thiram or one of the proprietary organo-mercury dusts, which are obtainable from horticultural sundriesmen.

Peas and beans are particularly subject to these rotting-off troubles and experiments have shown that natural germination can easily be increased by 100 per cent when the "coats" of the seeds are treated with a fungicide dust. This can be done either by putting about a mustardspoonful of the dust in a half-pint packet of peasand sealing and shaking the packet, or by using one of the special puffer packs now available. The nose of the puffer is inserted into the corner of the seed packet and the dust is puffed over the seeds. The hole is closed with the thumb and forefinger and the fungicide and the seeds are shaken up together.

SEEDS FROM COMPOST-GROWN PLANTS

Those who decry the use of chemical fertilizers use seeds from plants that have been grown on properly manured soil; they claim that the health of the parent plants can be passed on to the seedlings. Certain seedsmen, therefore, sell compost-grown seeds.

CHITTING SEEDS

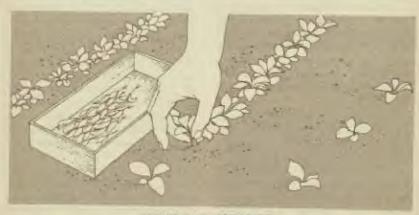
When sowing seeds in very dry weather and when the soil is dry, chitting—a process to encourage germination—is often used with smaller seeds such as carrots. Space the seeds out on an enamel plate and spray the seeds with water once a day through a scent spray. If the seeds are kept in a warm room, such as a kitchen, they germinate quickly. The

moment rudimentary roots appear, sow the seeds. Far fewer losses result but, because the baby roots are easily knocked off, the seeds are much more difficult to handle while sowing.

Another method of encouraging germination is to water the seed drill thoroughly through the fine rose of a can, allowing 2 gal, for a 5-ft row. After the drill has been soaked, the seed may be put in. Because of the quantity of water needed and the time taken by this method, some gardeners prefer to soak the seeds in water before sowing. Germination is consequently quicker and the resulting crops are often better. This method is particularly useful in the case of large seeds like peas and beans.

COVERING THE SEED

Whether the seeds are sown by station sowing or continuously along the drill, firm the ground over the seed once it has been covered. As soon as the seeds are sown, rake lightly over the drill or use the back of the rake to fill in the drill with soil. Then firm, Hold the handle of the rake vertically and work up the row pressing the soil down over the seeds with



THINNING OUT SEEDLINGS

Thin out the seedlings as soon as they are large enough to handle. Make sure that the ground is wet before thinning, and afterwards firm the soil to discourage egg-laying flies

the rake. Because this firming leaves a slight depression where rain-water may collect, draw the rake over the drill to disturb the top 1 in, of soil and thus leave the surface fine and level.

THINNING

Thin out any plants which appear to be growing too thickly together. This is best done after a shower or, if the weather is dry, after a good watering. Do the thinning as early as possible—just as soon as the plants are big enough to handle—so as not to damage the roots of the plants that remain.

Sometimes the thinning of plants attracts pests; this is particularly true of carrots and onions. It is important, therefore, never to leave any thinnings lying about on the surface of the ground, because their smell attracts flies. Firm the ground on either side of the rows after thinning, because this helps to prevent the flies from burrowing down and laying their eggs.

PLANTS AND PLANTING

Plants of the cabbage family, celery, cucumbers, leeks, marrows, sweet corn and tomatoes are usually raised either in seed beds out-of-doors, in boxes in the greenhouse, in frames or under Dutch lights, but sometimes it may be impossible to grow from seed all the plants required for the vegetable garden. Seedlings can then be bought from a reliable nurseryman. Warn the nurseryman the day before the plants are required so that he can see that his seed bed is watered and that the plants are in the proper condition. Be sure to have the strip of land prepared so that planting can be done as soon as possible.

If the plants have to come from a distance, ask that they be packed carefully, preferably with the roots in damp moss. When they arrive, unpack them at once and then stand them up to their "necks" in a bucketful of water for a couple of hours before planting. If possible do the planting in the evening so that the plants have a cool night to get over the shock. If they have to be planted in the day, shade them from hot sun.

Buy plants which are sturdy and have dark green leaves; do not take plants that have been forced and are therefore tender, long and lanky. It is particularly important not to use spindly tomato plants. Do not buy large lettuce and cauliflower plants, as it is the small ones that usually transplant easily. With any members of the cabbage family, watch out for swellings on the roots which may mean that they are infected with club root disease. Such specimens would infect the soil.

All plants should be examined for insect pests, for any damage that may have been done with hormone sprays, which cause the leaves to curl and twist, and for fungus diseases like mildew, which looks like a white powdery down on the foliage.

PLANTING

However the plants have been produced—in the open, or in boxes or pots in the greenhouse—disturb the roots as little as possible when planting out. Although cabbages or savoys will withstand bad treatment, cauliflowers and broccoli tolerate only the minimum of root disturbance and should not be planted too deeply; otherwise they will go blind—that is, they will not produce white curds.

With some seedlings (such as egg plants, marrows, cucumbers, tomatoes and sweet corn) it is as well to keep a good ball of soil at the base of the plant, covering the roots. By planting this ball of soil carefully, the seedlings will be subjected to the minimum of disturbance. There are soil-block machines

which make square or hexagonal blocks of soil, 3 in. or so across, in which the seedlings can be raised. At planting time the whole of the soil block is put out, and the plants growing in them therefore transplant perfectly. Soil blocks are best made with John lines potting compost.

It helps if, at transplanting time, the leaves of the seedlings are really turgid—firm and saturated with moisture. It is important, therefore, to water the seed bed thoroughly the day before lifting the plants.

If the weather is very dry, make a Vshaped drill 3 in, deep where the plants are to grow and plant along the bottom of it. Thus protection will be given against surface winds. It will also help to cut in half (with a sharp knife or a large pair of scissors) the leaves of plants that have a large leaf area.

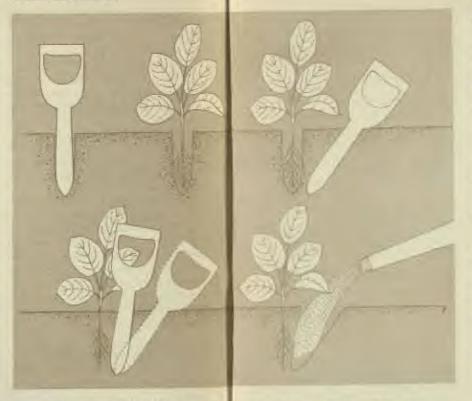
In very hot weather, shade the plants by fastening sacks over them on stakes for a few days. Important plants such as cauliflowers can be given daytime protection from hot sun by inverting flower pots over them. Remove the pots in the evening so that the leaves of the plants will receive the evening and morning dews, and remove the pots altogether after four or five days, when the plants should have produced fine root systems. Instead of pots, large leaves, like those of rhubarb, may be used as "parasols".

When using a dibber for planting out seedlings of the cabbage family, make perpendicular holes large enough to receive the roots of the plants.

Afterwards put in the roots, make a hole at an angle of 40 to 50° at one side of each plant and lever upward. This will firm the roots at the base of the stems, leaving a depression at the side of the plant. This may be filled with water at planting time if necessary and again three or four days later.

Tomatoes, cucumbers and sweet corn

HOW TO USE A DIBBER



Make a perpendicular hole large enough to hold the plant's roots, then make a hole at an angle of about 40° at one side of each plant and lever upward to firm

firm

are best planted with a trowel, so that good holes can be made for their large roots, and firming can be done with the handle of the trowel.

For leeks, make perpendicular holes with a long dibber or crowbar, drop the plants into the holes and pour in a little water. No firming is required.

THE PERMANENT CROPS

There are a few crops grown in the vegetable garden (asparagus, Welsh onions, the roots if necessary, fill the depression left at the side of the plant with water both at the time of planting and again a lew days later during very dry periods

rhubarb) that are permanent—they remain in their original position for a number of years. Crops like these cannot be included in any rotation plan.

The soil in which they are to be planted is first heavily manured by digging in old dung or well-rotted compost, at the rate of two 2-gal bucketfuls to the sq. yd. There is no need to dig deeper than a spade's depth and if this work can be done in October or early November, the soil may be left rough so that frosts and

cold winds can act on it. It will then be easy to fork down lightly and rake level in the spring.

Any subsequent feeding will need to be done from above and the worms will pull the fine organic matter into the ground. In addition to compost, give an organic fertilizer such as a fish manure each year, in February or early March, at 3 to 4 oz. to the sq. yd.

Do not plant permanent crops in the middle of the vegetable garden where they will be in the way; put them on their own, perhaps on a narrow strip of land at one end of the plot.

THE DANGER OF DROUGHT

It is impossible to grow succulent vegetables unless there is sufficient moisture in the soil. Crisp and succulent vegetable crops are grown quickly in soil rich in humus and containing sufficient moisture. Lack of moisture in the soil lowers the sugar content of the plants and causes them to become bitter and leathery. But during almost the whole of the period in which vegetables grow best, the rainfall is normally at its lowest.

WATERING

At this important dry period of the year, a watering-can is an inefficient tool. The amount of water it supplies is negligible and is soon dried up by the sun and carried away by the wind. The problem with a garden hose is that the water comes down with too much force: seed-lings may be washed out of the ground and the surface can easily be panned down.

An apparatus can, however, be attached to the end of a hose, which will throw the water up high into the air to reach the plants, as near as mechanically possible in the form of rain. Whirling sprinklers do this work adequately, but the area they cover is circular—and vegetable gardens are not usually that shape. The

FACTS AND FIGURES ABOUT VEGETABLE SEEDS

Vegerable	Average number of seeds per sunce	Average days to germination	Average life in years	Average days to matter from seven
ASPARAGUS	1,000	25	3.	(3 yrs.)
BEITROUTS	1,600	1.3	4	60-80
BYOCCOFT	9,000	8	4	270-450
BRUSSELS SPROUTS	7,000	-8	-4	100-120
BARLY CARRAGES	6,000	8	4	70-90
LATE CARRAGES	6,000	8.	4	90-130
CARROTS	14,000	16	3	75-100
CAULIFLOWERS	10,000	8.	3-4	65-120
CELERIAC	50,000	18	2-3	120-150
CELERY	50,000	16	3:	120-150
CHICORY	15,000	9	3-6	120-150
CUCUMBERS	1,000	9	3-5	70-90
ENDIVE	12,000	8	2-5	90-120
KALE	7,500	8	3-5	200
TOPE HARE	7,000	7	4-6	80-100
LEEKS	5,000	9	2-4	100-200
I ETTUCES	16,000	7	4-6	60-90
ONTONS	8,000	9	2	130-150
PARSNIPS	6,000	.17	1	125-150
PEAS	90-150	13	3-5	60-80
LADISHES	4,000	6	3-6	20-40
SALSIFY	4,000	12	2-3	130-170
ROUND SPINACH	2,500	13	3	40-50
NEW TEALAND SEINACH	350	п	3	70-80
IWIDE	7,000	8	4-6	150
TOMATOES	12,000	10	3-5	100-130
TURNIES	9,000	8	4-6	50-80

vegetable garden needs a "square-area rainer", a device fitted on an iron stand about 3 ft, high to the end of the hose. The water passes through a "rain fan" which moves backward and forward slowly so that artificial rain first covers the ground on one side of the fan and then on the other side.

A 1-in, hose with a square-area rainer attachment and with a mains pressure of 30 lb, per sq. in, will cover an area of 60 sq. ft. This appliance saves a tremendous amount of time and can ensure that the vegetable crops receive the water they need in the right way.

The amount of water that has to be given depends on the season, on the crop and on the soil. Dry, sandy soils may need twice as much water as heavy, clay soils. Artificial rain will need to be given regularly in a dry summer and perhaps only occasionally during a showery summer season. In a loamy soil garden (loam is about half clay and half sand) water once a fortnight, and aim to give a quarter of an inch each time. Efficient square-area rainers should deliver \(\frac{1}{2}\) in. of artificial rain an hour.

On light, sandy soils it will probably be necessary to give 1 in. of water once a week, especially in cases where quick-maturing crops like spinach, radishes and lettuces are being grown. Whether the soil is light or heavy it is important to ensure that organic matter has been added, for artificial rain is most useful when there is ample humus.

If a strip of ground becomes vacant in the summer because a crop has been harvested, water this strip thoroughly before it is cultivated again. Prepare the soil an hour or so later, and on the following day it should be possible to sow the seed or plant out the seedlings of the new crop. Do not wait too long or the benefit of watering will be lost.

Shallow-rooting crops naturally suffer far more in a dry summer than deeprooting ones. Concentrate, therefore, on
watering lettuces, spinach, radishes,
spring onions, early potatoes, turnips,
cauliflowers, celery and celeriac. It is also
a good thing to water the plants of cabbage, broccoli and sprouts while they are
still in their seed beds.

It is not true that the leaves of plants will be scorched if artificial rain is given on a bright, sunny day.

Scorching can take place if a wateringcan is used on the leaves of plants when the sun is bright; this is because large drops of water act as a lens or "burning glass" which causes the sun's rays to burn. But if the drops of water are thrown well into the air they break up into very tiny droplets which are "aerated" and do not cause scorching because they wet the leaves evenly.

Never wet the leaves of plants without ensuring that the ground is moist at the roots.

When artificial rain is used properly there is much less trouble from insect pests and fungus diseases. When very wet, the "pores" of leaves are open to the greatest extent; disease spores can get in, and aphids and mildew can attack more readily. When the surface soil is dry, earthworms, which improve the fertility of the top few inches of soil, and are most useful to vegetables, burrow down deeply.

It must be borne in mind that overhead irrigation tends to leach plant foods and lime out of the soil, so it should not be overdone. Plant foods can easily be replaced by careful fertilizing and manuring.

EFFECT OF CLIMATE

A very large number of vegetables can be grown in British gardens. Some, like cabbage, are easy to grow, while others, such as celery, need more complicated management.

In the south, and more particularly in the south-west, it is usually possible to sow and plant much earlier than in the north and north-east. The difference may be as much as two or three weeks.

The suggested times of sowing and planting given under the headings of individual vegetables are average ones for the Midlands, except in the cases where specific times for north and south are given.

It is not, however, always a question of north versus south. There are sheltered parts of the north-west, round Cheshire and Flintshire, which are much earlier than more exposed parts round the east coast of Norfolk. There are some very warm, sheltered spots on the west coast of Scotland affected by the Gulf Stream. The vegetable gardener should therefore time sowing and planting to suit his own district.

Times of sowing will also vary because of the season itself. In some years there are serious frosts as late as the beginning of June, and there are seasons when there is early summer warmth in March. It is therefore necessary to make commonsense decisions.

ARTICHOKES

There are two kinds of artichoke, globe and Jerusalem. The globe is a perennial and has a thistle-like head, with scales surrounding a fleshy frond or heart, which is the part with the most flavour.

The Jerusalem artichoke is grown for its tubers, which are produced in the soil like potatoes. Although it also is a perennial, the Jerusalem artichoke is more conveniently grown by digging up the tubers each season and replanting the best specimens the following year, as in the case of potatoes.

GLOBE ARTICHOKES

SOIL PREPARATION

Do not attempt to grow artichokes unless the soil is well drained. It should be moist in the summer and dry in the winter. Choose a sunny position because the unopened flower heads have more flavour when they come from plants that have had direct sunlight. As the flowerbearing stems grow tall and are easily blown over, they should be sheltered from winds.

In the autumn dig the ground over to a spade's depth, incorporating old dung or well-rotted compost at the rate of a bucketful to the sq. yd. and leave the ground rough. If the soil is a heavy clay, frost will help to break it down. Fork the ground level in the spring, adding a fish manure or a meat and bone meal at 3 oz, to the sq. yd. (Give a similar dressing late in March or early in April each year.)

PLANTING

It is not advisable to raise plants from seed because there is then too much variation in the size and flavour of the flower heads. Buy plants of a good variety from a reliable nurseryman; and increase the stock vegetatively by severing the side growths (suckers) which develop from the base of the plants each year.

Cut them from the parent plants when they are 9 in. long, taking care to see that there is a piece of the old plant's root at the base. Plant out these suckers in the second or third week of April in rows 3 ft. apart, allowing 3 ft. between the plants. Make holes with a trowel to take the complete root and about an inch of the sucker itself. Firm well and, if the ground is dry, give a good watering afterwards.

In the north of England and in Scotland, or areas that have particularly hard winters, cut off the suckers early in November and pot them up individually into 6-in. pots, which should then be protected from frosts in a cold frame. Late in May, when all fear of frosts has passed, carefully knock the plants out of their pots and set them out as described above.

GENERAL CARE

If the artichokes are not growing sturdily by early June, top dress with dried blood or a complete fertilizer at 2 oz. to the yard run.

During the summer use the Dutch hoe lightly in between the plants to keep down weeds and to create a dust mulch—that is a ½-in, layer of loose soil all over the surface of the ground. Early in November give some protection to the plants against frost: loose straw can be placed over each specimen, to form a kind of Red Indian tepee, and removed in April. If the straw gets absolutely sodden during the winter it should be replaced. Dry bracken lasts longer and gives even better protection than straw.

Good artichoke plants have been known to last 12 years or more, but it is safer to make a new bed every five or six years or, better still, to replace whole rows one at a time; this ensures that good globe artichokes are available every year.

HARVESTING

No large flower heads are produced the first year. In the early summer of the second year, the large thistle-like heads at the ends of the stems should be cut just before they open. Cut the main head, known as the king head, at the end of each stem first. Secondary growths will then develop, each of which will produce a tender flower head which should be cut when it is about the size of a large hen's egg.

It is advisable to cut globe artichokes an hour before cooking.

RECOMMENDED VARIETIES

Green Globe, the variety usually grown in Britain. May be raised from seed.

Gros Camus de Bretagne, produces large delicious flower heads. Not completely hardy and must, therefore, have protection.

Gros Vert de Laon, a medium-sized variety that does well in the north.

Purple Globe, similar to Green Globe, with purple-tinged heads.

IERUSALEM ARTICHOKES

These tuberous-rooted vegetables are not easy to prepare for the table because the tubers are knobbly. There is, however, a new variety which has quite smooth tubers, like those of a dahlia. Because the stems will grow 7 ft. high, Jerusalem artichoke plants can be used as a hedge or wind-break at the end of the garden.

SOIL PREPARATION

Jerusalem artichokes will not grow well in sodden, undrained land; they prefer a dry, warm, well-drained position, although they often crop well on ground where other vegetables have failed. To produce large tubers, dig in well-rotted manure or compost at the rate of a bucketful to the sq. yd. At the time of planting, apply a fish manure or a meat and bone meal fertilizer at 2 oz. to the sq. yd. To supply extra potash, apply wood ash, if available, at 5 oz. to the sq. yd. or sulphate of potash at 2 oz. to the sq. yd.

PLANTING

In March or early April, plant tubers about the size of hen's eggs using, in the case of the ordinary varieties, those which are as smooth as possible. The less knobbly the tubers, the less knobbly will be the crop. For the smooth variety, plant tubers that are about ½ in. across and 2 in. long.

Using a draw hoe against a tightly stretched line, take out a furrow 6 in. deep and spread well-rotted manure or compost evenly along the bottom. Plant the tubers 1 ft. apart in the furrow and then use the draw hoe again to cover them, leaving a ridge about 2 in. high over the top. Sprinkle the organic fertilizer along the row at this stage, taking care that the fish manure does not fall on the tubers. If more than one row of artichokes is planted, make the rows 3 ft. apart.

GENERAL CARE

When the plants are 1 ft. high, use a draw hoe lightly over the surface to draw the soil up to the plants. Do this every fortnight or so and until the rows are earthed up 6 in. or more, Because the artichokes grow so tall it is advisable, in a windswept situation, to drive a 6-ft, stake into the ground at each end of each row, and to run wires from both sides of the stakes. The stems can then be kept inside these parallel wires, to prevent them from blowing over and exposing the tubers.

By the end of October the great bulk of the tubers will have been made and the



GLOBE ARTICHORE-Green Globe

tops can be cut down to within 2 ft. of soil level. Chop up the tops with an axe and put them on the compost heap to rot down.

HARVESTING

The tubers of Jerusalem artichokes are quite hardy and can be left in the ground until they are needed in the winter. But frozen soil makes it difficult to lift them, so dig up the tubers carefully at the end of November and put them in a heap 3 ft. wide by 3 ft. high and cover them first with 6 in. of straw and then with 6 in. of

soil. Small quantities of tubers can be put in boxes with sand or sedge peat for storing in the potting shed or outhouse.

When harvesting the crop take care that every tuber, however small, is dug up or the artichoke may become a "weed" the following year.

RECOMMENDED VARIETIES

Fuseau, a variety with beautifully smooth tubers, usually smaller than the more knobbly kinds.

New White, a pure white strain of the old, purple-eyed kind.

ASPARAGUS

This delicious vegetable used to be grown in special beds and was generally considered difficult. Although asparagus still requires some special treatment, its cultivation has been made quite simple by the genetical breeding of Captain A. W. Kidner who, during the last 15 years, has produced a heavy-cropping, easy-to-grow strain known as K.B.F. Buy "pedigree" crowns, even though they are dearer.

SOIL PREPARATION

Asparagus prefers a sandy soil or even a sandy loam, as these warm up quickly in the spring because of their low moisture content. Thus the plants are stimulated into growth, and the asparagus sticks can be cut early. Asparagus can be grown successfully on heavy clay, provided that the drainage is good, but the crop may be a fortnight later than one from a warm sandy loam.

Some protection should be given against cold north-east winds, either by planting a permanent hedge or by erecting a roll of sacking 4 ft. high on posts each February. The sacking may be taken down in July.

Prepare the ground by digging to a spade's depth in the autumn and burying old dung or well-rotted compost at the rate of a large bucketful to the sq. yd. Leave the soil rough.

About the third week of the following March, fork over the soil 3 or 4 in. deep. Apply a fish fertilizer, with an analysis of about 6 per cent nitrogen, 6 per cent phosphates and 6 per cent potash, all over the ground at 4 oz. to the sq. yd. A similar dressing should be given at the same time each year until the asparagus bed is exhausted, which may be up to 20 years later.

Each October put down old dung or

good compost along the rows, allowing one large bucketful to each yard run. Do not dig this in but leave it on the ground as a top dressing.

The intended asparagus bed should be absolutely free from perennial weeds. On no account plant in soil known to be infested with docks, nettles, thistles or convolvulus. These should be eliminated either with a strong hormone solution or by adopting the double green manuring method (see Composting and Green Manuring).

PLANTING

Asparagus roots are thick and succulent and so dry out quickly. Therefore, when the plants arrive from the nurseryman, soak them in water for a day and then put them out in the garden covered with damp sacks. Do not expose the roots to the air more than necessary.

Plant during the third week in March or early in April, as soon as the soil is dry and friable; do not plant when it is wet and sticky. It is better to put in one-yearold crowns, although they take a little longer to crop.

Cut trenches 6 in. deep and 6 in. wide, 3 ft. apart. Remove the plants from their damp sacks and plant them 2½ ft. apart, as quickly as possible, in the bottom of these trenches, spreading the roots out carefully so that they radiate evenly all round the crowns. Cover them with 3 in. of good soil, firming this with the back of the spade, and allow the trench to fill up gradually during the summer as hoeing proceeds. By October the ground should be level.

Allow the roots to get established the first year, and during the second year let the fern grow well so that good crowns are built up which will produce good shoots early the following season.

GENERAL CARE

For the first two years, lightly hoe to keep down weeds, and apply manures and fertilizers. In early November, cut down the fern to within 1 in, of soil level with a pair of shears. In the third year, when the asparagus is to be cut, use a draw hoe early in March to make a ridge over each row about 5 in, high. The ridge should not be too steep; an angle of 45° is sufficlent. The ridge helps to ensure a longer asparagus stem for cutting, and keeps the shoots white.

HARVESTING

Cut the asparagus sticks 4 in, below the normal surface of the soil, using a long narrow knife or a special asparagus knife with a serrated edge, but do not cut so low that the crowns of the plants are damaged. Cut every two days in the early part of the season (usually early May) and every day when the weather gets warmer. Serve the cooked asparagus within two hours of cutting if possible.

gree" crowns.

ASPARACUS REFTYE

Where the red and black asparagus beetle has attacked the foliage, leave about three stems of fern at the end of each row. The beetles that fell to the ground when the rest of the fern was cut will climb up the remaining stems where they may be killed with D.D.T. powder.

RECOMMENDED VARIETIES.

Argenteuil Early, delicate flavour and fine texture; not a very heavy cropper.

Connover's Colossal, good thickstalked variety with slender, pointed buds.

K.B.F., the best heavy-cropping strain; sticks are large and delicious.

Stop cutting early in June and leave any further stems to grow and produce asparagus fern. Cut the fern itself down to within 6 in. of soil level just before the berries ripen; if they are allowed to ripen and fall to the ground, useless seedlings which are difficult to eradicate will mask the effect of the carefully chosen "pedi-

BEANS

BROAD BEANS

One of the oldest known vegetables, broad beans are easy to grow well. They are extremely hardy and the seed can therefore be sown in the autumn as well as in the spring.

SOIL PREPARATION

Broad beans will grow in almost any soil, whether light or heavy.

Plant autumn-sown seeds in soil which was well manured for the previous crop. In addition, and before sowing, lightly fork a fish manure with a 10 per cent potash content into the ground at 3 oz. to the sq. vd.

Three weeks before spring sowing, dig well-rotted dung, fully rotted compost or Pompost into the ground to a spade's depth at the rate of one large bucketful to the sq. yd. When the soil is being made level and ready for seed sowing, rake fish

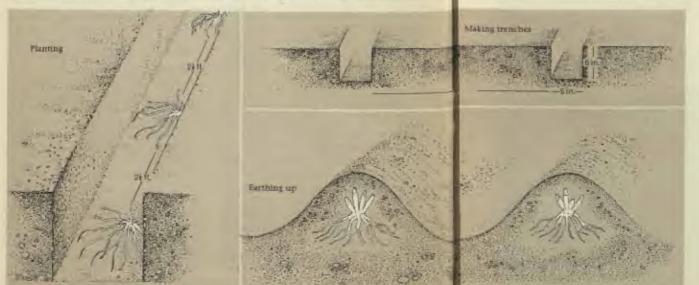
manure at 3 oz, to the sq. vd. into the top inch of soil.

The white-seeded Windsor types of broad beans have more flavour than the green-seeded long-pod types, but are not so hardy. In colder parts of the country it is best to rely on the long-pods only.

SOWING

For an early crop, sow long-pods in November, making holes with the dibber 2 in, deep and 6 in, apart, and drop one bean into the bottom of each hole. Treat the beans first with a thiram dust to prevent pre-emergence rot. In the south, where the soil is not too heavy, a second sowing of long-pods can be made during the middle of February.

Where it is not advisable to sow out-ofdoors in November, it is still possible to ensure an early crop. Seed of long-pods may be sown in boxes of Eclipse No-Soil or John Innes seed compost in a greenhouse or frame about the middle of December or early in lanuary. The plants are then grown on under glass until about the third week of March when they can be planted out-of-doors 6 in. apart. Another method is to sow longpods in January under cloches or ganwicks and then remove the glass early in April, For ordinary crops make the first sowing of long-pods or Windsors outof-doors early in April and a second sowing for a late crop about the beginning



PLANTING ASPARAGUS

After cutting the trenches, set the crowns in them, carefully spreading out the roots, and cover the crowns firmly with a in; of good soil. In the third year, make a win, high nide of soil over each row to blanch the stalks

of May. On a dry day, having raked the soil level and given a fish manure, use a draw hoe to take out a drill 3 in, deep. Space the beans out 8 in, apart in the drill. Take out another drill 8 in, away and sow seeds in it, also 8 in, apart. This is known as the double row method. Plant the next double row 2½ ft, away.

Sow dwarf varieties in drills 6 in. apart in double rows, with 6 in. between the rows, and the next pair of double rows 2 ft. away.

In both cases it is advisable to sow 12 seeds in a group at the end of each double row, in 3-in. deep holes. When the resulting seedlings are 3 in. high, plant them out in any gaps that appear in the rows. If there are no gaps, pull them up and throw them on to the compost heap.

GENERAL CARE

Blackfly (black aphid) is a serious pest of broad beans. It can be discouraged if the top inch of each plant (the succulent part beloved by the blackfly) is pinched out when the first flowers appear. This "stopping" also encourages the production of earlier beans. Spray the plants with liquid derris, malathion, lindane or nicotine.

Use a Dutch hoe lightly between the rows and among the plants during the spring and summer to loosen the soil to a depth of \(\frac{1}{2} \) in. Directly the bean crop has been picked, cut the plants down to within 1 in. of soil level; the tops are valuable on the compost heap as they are rich in potash. Autumn-sown beans, if cut down in this way, will produce secondary stems which may yield another late crop. The roots of the beans should always be left in the ground because nitrogen nodules on them benefit the future crop (see The Soil).

HARVESTING

Pick the pods while the beans inside are still young and tender, but not before they are the size of sixpenny pieces; they are not wholesome when smaller.

RECOMMENDED VARIETIES

Dwarf Broad Beans

Sutton, grows only 10 in. high, and branches freely.

Dwarf White Fan, green seeded with small pods. Grows 1 ft. high. Early.

SOWING BROAD BEANS
Sow the beans s in. apart in 3-in. deep, V-shaped drills. Make the drills in pairs s in. apart, allowing 23 ft. between each pair





PINCHING OUT BROAD BEANS
To discourage blackfly and encourage the production of earlier beans,
pinch out the growing tip of each plant when the first flowers appear.
Fick the pods when the beans are still young and tender

Long-pod Beans

Aquadulce Claudia, the earliest; produces very long pods of good flavour, Recommended for autumn sowing.

Green Long-pod, green-seeded; early and prolific. Long pods; good for cooking.

Johnson's Wonderful, medium-sized pods; often used when half-grown and cooked whole.

Masterpiece, superior green-seeded variety with long pods.

Sussex Wonder White Long-pod, very broad pods; most prolific and earlier than Johnson's Wonderful.

Windsor Beans

Green Windsor, a heavy cropper of good flavour,

White Windsor, not such a heavy cropper, but has better flavour and cooking qualities.

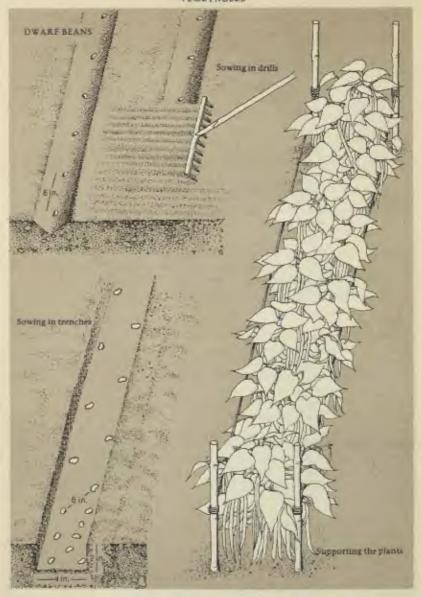
DWARF OR FRENCH BEANS

These beans, which are sometimes also called kidney beans, are preferred in France to the coarser runner beans; in Britain they are neglected when the runners start cropping. Successional sowings will provide french beans through much of the year. There are both green and golden varieties.

SOIL PREPARATION

French beans prefer a light soil, but they can be grown in heavy clay if ample fine organic matter is forked in. There is perhaps no crop that withstands dry conditions better; french beans crop on poor soil and leave it in better condition after cropping because nitrogen is built up through bacteria working in small white nodules on the roots.

Dig the ground to a spade's depth in the autumn and bury old compost and well-rotted dung at the rate of a large bucketful to the sq. yd. Leave the ground rough, especially if it is heavy, and frost and cold winds will help to make it friable for a light forking in the spring. At this time add a fish manure with a



Sow the seeds in a straight line along a V-shaped drill, or in a zigrag along a flat-bottomed drill. Always put a few extra seeds at the end of each row to provide seedlings for filling gaps. In a windy situation, support the beans by pushing in a 4-ft, bamboo cane at the end of each row and running a piece of string, tied to the canes, down either side of the row

6 per cent potash content at 3 oz. to the sq. yd. and, unless the soil is chalky, give a surface dressing of carbonate of lime at 5 oz. to the sq. yd.

SOWING

French beans should not be sown until the ground is warm; this usually means the last week of April in the south and the second week of May in the colder parts of the north. As damp is this vegetable's greatest enemy, do not sow until the soil is sufficiently dry, and never pour water in the drill at sowing time.

Put down a line stretched taut as a guide, and scratch out a V-shaped drill 2 in. deep with the corner of a draw hoe. Sow the seeds 6 in. apart in this drill and afterwards rake lightly to cover the beans completely. Then firm the soil over the top of the seeds with the rake head, and finally give a light raking to remove foot and rake-head marks.

Another method of sowing is in a double row; use a 4-in, wide drawhoe to rake out a flat bottomed drill 2 in, deep and 4 in, wide. Place the beans zigzag fashion, 6 in, apart along the drill.

In both cases sow eight to ten beans 2 in. deep and 2 in. apart at the end of each row, and when the seedlings are 2 in, high use them to fill up gaps in the main rows.

SUCCESSION OF CROPS

For regular picking of beans sow a row every three weeks, from the last week of April until the middle of July. If a different variety is sown each time, the variety with the best cropping powers and flavour for the particular garden can be discovered. In small gardens, sow half rows of french beans every three weeks instead of full rows.

For early french beans sow the seed under cloches or ganwicks in mid-March; the beans can then remain covered until the end of May when they will be almost ready for picking. As the soil tends to dry out, it is sometimes necessary to water under cloches or ganwicks when the plants are 6 in. high. Early in October, cover the mid-July sowings with cloches or ganwicks to protect them from frost. It will then often be possible to pick the beans until the second week of November.

GENERAL CARE

Normally, french beans will stand upright of their own accord, but in windy situations provide bushy twigs, such as pea sticks, to keep the plants upright and the beans from trailing on the ground. Alternatively, plant a 4-ft, bamboo cane at both ends of each row and run a piece of string, tied to the canes, down either side of the row to keep the plants upright. Supporting the plants keeps the beans clean and free from soil and lessens damage by slugs. Hoe lightly between the rows when necessary, tending to draw the soil up to the plants rather than away from them. In a dry season, apply sedge peat as a mulch on either side of the row to a depth of 4 in, and for a width of 6 in.

SEUGS

When there is a serious attack, kill the pests with Slugit pellets sprinkled in between the rows.

HARVESTING

Always pick the pods when they are young and tender. Never allow a pod to produce seed for this will discourage the plant from cropping again. Most french beans are stringy unless they are picked young, but there is a delicious and stringless variety named Phoenix Claudia.

Pick the beans an hour before they are needed for cooking.

RECOMMENDED VARIETIES

Canadian Wonder, an old variety, strong upright grower, pods about 61 in. long. Buy seeds from a reputable firm. Feltham Prolific, slender, straight pods; use when 4 in, long. Good for sowing early under cloches.

Granda, a white-seeded variety, with medium green pods.

Masterpiece, good cropper of excellent quality, suitable for forcing.

Mont d'Or, a little-used, goldenpodded variety; delicious fleshy beans.

Phoenix Claudia, the really stringless variety; pods are light green and 5 in. long. Not a very heavy cropper.

The Prince, a dwarfer type of bean, with pods often 9 in. long, Produces prolifically and early.

Tender Green, fleshy, tasty pods 7 in. long; sturdy plants, early and prolific.

There are two or three climbing varieties of french beans which should not be confused with runner beans. They are more suitable for growing in the greenhouse in the late winter or early spring. The best is perhaps Jersey Runner, which has abundant narrow, fleshy pods about 7 in. long.

FLAGEOLET BEANS

Prepare the ground, sow the seed and grow exactly as for french beans; harvest while the beans in the pods are green.

RECOMMENDED VARIETIES

Granda, plants grow 11 ft. high and crop more heavily than White Leviathan.

White Leviathan, the plants grow about 15 in. high and produce plenty of foliage. Flavour is excellent.

HARICOT BEANS

The plants are grown in exactly the same way as french beans, but the pods are allowed to stay on the plants after the seeds have ripened. When thrashed, the beans are either white or yellowish-brown. Though popular abroad they are seldom grown in Britain, because the yield is low in proportion to the space taken up by the plants.

SOWING

Where cloches or ganwicks are available, sow the seed 2 in, deep with the rows 1½ ft, apart early in April. Remove the cloches or ganwicks by the end of May, but put them back again in the first week in September to make certain that the pods ripen properly. In sunny dry years, of course, this is not necessary.

When growing the plants in the open without any glass protection at all, sow the seed in late April.

HARVESTING

Uproot the plants in late September or early in October and put them complete with pods into a sack. Beat the sack with a stick to thrash out the dry beans, separate the seeds from the dried pods and put the haulms and roots on the compost heap. Store the beans in jars or tins for the winter.

RECOMMENDED VARIETIES

Brown Dutch, a coarse-growing, vigorous variety. Usually grows 1½ ft. high. The pods ripen well and are easy to shell. The beans are yellowish-brown.

Merton Haricot, a better strain than White Rice. The beans are a little larger, though the crop is not quite as heavy and is ready a few days earlier.

White Rice, a form of the well-known Comtesse de Chambord variety. The plants grow about 15 in. high, and bear masses of small, white-skinned beans. The pods are small.

RUNNER BEANS

Runner beans are among the most popular vegetables in Britain, yet until about 80 years ago they were grown only because of the beauty of their flowers. They have a stronger flavour and are somewhat coarser than french beans.

SOIL PREPARATION

As runner beans are deep rooting it is advisable to dig the land more than a spade's depth and to bury well-rotted manure or compost 9 or 10 in. down at the rate of a large bucketful to every sq. yd. Alternatively, dig a trench a spade's width across and 2 ft. deep and bury old dung or compost at the rate of two bucketfuls to the yard before putting back the soil and treading firmly.

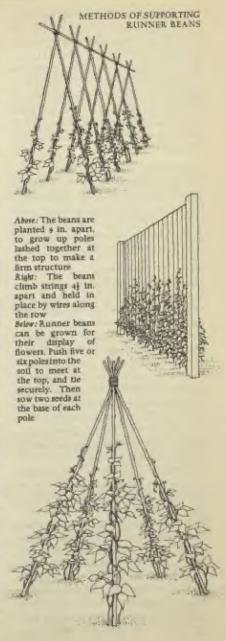
In either case lightly rake in a fish manure with a 10 per cent potash content at 4 oz. to the sq. yd. Unless the soil is known to be chalky, apply carbonate of lime as a surface dressing at 4 oz. to the sq. yd. At sowing time rake in 2 oz. superphosphate and 1 oz. sulphate of potash to the sq. yd.

SOWING

Because runner beans will not germinate in cold soil, do not sow before the third week in May in the north and the second week in May in the south. In Devon and Cornwall, however, it is often possible to sow late in April. In other areas cloches put in position over the strip of land about the middle of February will help to make the soil warm enough for sowing by the middle of March. To ensure a late picking of runner beans, make a second sowing about mid June (in years when there is no early October frost, beans are sometimes picked in the south as late as early November).

Runner beans can be grown in two main ways: (a) to climb up wire netting or poles, when the sets of double rows should be 5 ft. apart and (b) on the flat, like french beans, using a dwarf-growing kind such as Hammond's Dwarf Scarles, when the rows should be 3 ft. apart.

If the beans are to climb, push poles into the ground 9 in, apart in two rows so that they cross 6 in, from the top, lash them together where they cross. In exposed situations, tie bamboos along the V formed at the top of these poles to provide extra support. Sow the seeds at the base of the poles and 9 in, apart, so



that the plants can climb up naturally.

Sow the seeds at a depth of 2 in, either by taking out drills to this depth with the point of a draw hoe held against a tightly stretched line, or by making separate holes with the dibber at the right depth and dropping one seed into the bottom of each. Put in a dozen beans in a circle at the end of each row, and a month later use the plants that result to fill up any gaps in the main row.

EARLY CROPS

Use a cool greenhouse or frame for raising early beans. Sow the seeds in Eclipse No-Soil or John Innes compost 2 in. apart, in a box at least 4j in. deep. Fifty plants can be raised in a box 2 ft. by 1 ft. Plant out early in June.

METHODS OF GROWING

Runner beans may be grown on the same strip of land year after year. A good situation is, therefore, by the sence at the bottom of the garden, where they will please the eye and will not interfere with or shade other crops.

Alternatively, drive strong 8-ft. posts into the ground every 8 ft. across the garden or plot, and stretch two lengths of telephone wire between them, one at the top of the poles and the other near the bottom. Tie upright strings to the wires at 4½-in, intervals 50 that the beans can climb up them.

Another method is to use 2-in, mesh wire netting stretched tightly between posts and to allow the beans to grow up the wire.

A particularly attractive runner-bean flower with crimson and white blooms comes from a variety called Painted Lady. To make a display, push a group of five or six poles into the flower border to meet at the top like a Red Indian tepes. Secure them rightly with string at the apex and sow two seeds in dibber holes at the base of each pole. Before long

the whole structure will be covered with leaves and flowers.

Whatever the method used, be sure that the structures are really firm, because loose, wobbly supports can seriously affect the plants.

Another idea is to grow the climbing varieties as though they were dwarf kinds. Sow the rows 3 ft. apart with the beans 8 in. apart in the rows, and when the plants are 1 ft. high cut them with a pair of shears so as to keep them dwarf. Clip them back again a fortnight later, and then at fortnightly intervals. The plants are kept small in this way, but because the beans tend to lie on the ground they get dirty.

GENERAL CARE

As the roots of runner beans need plenty of moisture if they are to crop heavily, apply a mulch of lawn mowings or sedge peat along the rows in late June, spreading it 1 ft. on either side of the plants. Lawn mowings should not be put on deeper than \(\frac{1}{2}\) in. because a greater thickness is apt to heat up and damage the stems of the beans.

During dry weather in the summer, spray water on the plants from time to time, preferably in the late evening; this will help the set of the flowers. Be prepared to water well with an overhead sprinkler for at least an hour once a week during a drought,

SLUGS

Slugs can be a great nuisance in attacking this crop when the plants are first coming up. Apply Slugit pellets along the rows; the slugs will leave the plants and feed on the pellets, which will kill them.

HARVESTING

It is most important to pick all the beans as they become ready—before the seeds start to swell inside—or cropping will stop because the plant has succeeded in reproducing itself.

Look for the pods hidden behind the bigger leaves towards the base of the plant. The more the beans are picked, the greater the yield.

RECOMMENDED VARIETIES

Czar, a white-seeded variety, which does better than any other kind in dry years. The pods are broad and tasty and can be left on the plants for the beans to be thrashed out for winter use as dried butter beans.

Cookham Dean Improved, good, strain, bearing a heavy crop of long slender beans of fine quality.

Giraffe, a typical, tall-growing variety producing fine pods of exceptional length and quality.

Hammond's Dwarf Scarlet, a new

runner bean that never climbs. It remains 2 ft. high.

Kelvedon Marvel, an early, prolific, semi-dwarf type which is useful to grow by the cutting-back method.

Painted Lady, the beautiful crimsonand-white-flowered kind. A moderately heavy cropper, with prettily marked seeds.

Princeps, very similar to Kelvedon Wonder but slightly smaller. The easiest scarlet runner to grow.

Prizewinner, often grown for exhibition because it produces immensely long fleshy pods of good flavour.

Streamline, one of the most widely grown varieties. It produces long pods of excellent quality, usually borne in clusters of five or six.

BEETROOTS

Two types of beetroot are normally grown, the round or globe and the long.

SOIL PREPARATION

Beetroots do best on a light, sandy loam but will grow perfectly well on heavier soils that are suitably prepared.

Fork into the ground old compost or sedge peat at one backetful to the yard. On a clay soil dig the plot over in the autumn and leave it rough. The frost and cold winds will break down the clods and make it easier to rake the soil fine in the spring.

Before seed sowing, apply meat or bone meal or a fish manure with a 6 per cent potash content at 4 oz. to the sq. yd. and rake in lightly.

SOWING

The seeds sold in packets are really little fruits containing three or four seeds. It is therefore unnecessary to sow such seeds in a continuous row. Sow two fruit

capsules every 4 in. along a 1-in. deep, V-shaped drill which has been prepared with a draw hoe. (This is called station sowing.)

For the round or globe beet sow the seed in rows 1 ft. apart; the long varieties should be 1½ ft. apart. After sowing, cover the seed by filling in the drill with the back of the rake head and then firm over the line with the rake held perpendicularly to the soil. Eastly, rake lightly to remove marks.

Make the first sowing of early globe beet about the middle of April and the second sowing about the middle of May. A third sowing about the second week in July will provide tender young roots in the autumn and early winter.

The long beet, the roots of which are allowed to reach full maturity before being harvested in the winter, is usually the main beet crop and is sown about the middle of June. that the plants can climb up naturally.

Sow the seeds at a depth of 2 in, either by taking out drills to this depth with the point of a draw hoe held against a tightly stretched line, or by making separate holes with the dibber at the right depth and dropping one seed into the bottom of each. Put in a dozen beans in a circle at the end of each row, and a month later use the plants that result to fill up any gaps in the main row.

EARLY CROPS

Use a cool greenhouse or frame for raising early beans. Sow the seeds in Eclipse No-Soil or John Innes compost 2 in. apart, in a box at least 11 in. deep. Fifty plants can be raised in a box 2 ft. by 1 ft. Plant out early in June.

METHODS OF GROWING

Runner beans may be grown on the same strip of land year after year. A good situation is, therefore, by the fence at the bottom of the garden, where they will please the eye and will not interfere with or shade other crops.

Alternatively, drive strong 8-ft. posts into the ground every 8 ft. across the garden or plot, and stretch two lengths of telephone wire between them, one at the top of the poles and the other near the bottom. The upright strings to the wires at 4½-in. intervals so that the beans can climb up them.

Another method is to use 2-in. mesh wire netting stretched tightly between posts and to allow the beans to grow up the wire.

A particularly attractive runner-bean flower with crimson and white blooms comes from a variety called Painted Lady. To make a display, push a group of five or six poles into the flower border to meet at the top like a Red Indian teper. Secure them tightly with string at the apex and sow two seeds in dibber holes at the base of each pole. Before long

the whole structure will be covered with leaves and flowers.

Whatever the method used, be sure that the structures are really firm, because loose, wobbly supports can seriously affect the plants.

Another idea is to grow the climbing varieties as though they were dwarf kinds. Sow the rows 3 ft. apart with the beans 8 in. apart in the rows, and when the plants are 1 ft. high cut them with a pair of shears so as to keep them dwarf. Clip them back again a fortnight later, and then at fortnightly intervals. The plants are kept small in this way, but because the beans tend to lie on the ground they get dirty.

GENERAL CARE

As the roots of runner beans need plenty of moisture if they are to crop heavily, apply a mulch of lawn mowings or sedge peat along the rows in late lune, spreading it 1 ft. on either side of the plants, lawn mowings should not be put on deeper than ½ in, because a greater thickness is apt to heat up and damage the stems of the beans.

During dry weather in the summer, spray water on the plants from time to time, preferably in the late evening; this will help the set of the flowers. Be prepared to water well with an overhead sprinkler for at least an hour once a week during a drought.

SLUGS

Slugs can be a great nuisance in attacking this crop when the plants are first coming up. Apply Slugit pellets along the rows; the slugs will leave the plants and feed on the pellets, which will kill them.

HARVESTING

It is most important to pick all the beans as they become ready—before the seeds start to swell inside—or cropping will stop because the plant has succeeded in reproducing itself. Look for the pods hidden behind the bigger leaves towards the base of the plant. The more the beans are picked, the greater the yield.

RECOMMENDED VARIETIES

Czar, a white-seeded variety, which does better than any other kind in dry years. The pods are broad and tasty and can be left on the plants for the beans to be thrashed out for winter use as dried butter beans.

Cookham Dean Improved, good, strain, bearing a heavy crop of long slender beans of fine quality.

Giraffe, a typical, tall-growing variety producing fine podsof exceptional length and quality.

Hammond's Dwarf Scarlet, a new

runner bean that never climbs. It remains 2 ft. high.

Kelvedon Marvel, an early, prolific, semi-dwarf type which is useful to grow by the cutting-back method.

Painted Lady, the beautiful crimsonand-white-flowered kind. A moderately heavy cropper, with prettily marked seeds.

Princeps, very similar to Kelvedon Wonder but slightly smaller. The easiest scarlet runner to grow.

Prizewinner, often grown for exhibition because it produces immensely long fleshy pods of good flavour.

Streamline, one of the most widely grown varieties. It produces long pods of excellent quality, usually borne in clusters of five or six.

BEETROOTS

Two types of beetroot are normally grown, the round or globe and the long-

SOIL PREPARATION

Beetroots do best on a light, sandy loam but will grow perfectly well on heavier soils that are suitably prepared.

Fork into the ground old compost or sedge peat at one bucketful to the yard. On a clay soil dig the plot over in the autumn and leave it rough. The frost and cold winds will break down the clods and make it easier to rake the soil fine in the spring.

Before seed sowing, apply meat or bone meal or a fish manure with a 6 per cent potash content at 4 oz. to the sq. yd. and rake in lightly.

50WING

The seeds sold in packets are really little fruits containing three or four seeds. It is therefore unnecessary to sow such seeds in a continuous row. Sow two fruit

capsules every 4 in. along a 1-in. deep, V-shaped drill which has been prepared with a draw hoe. (This is called station sowing.)

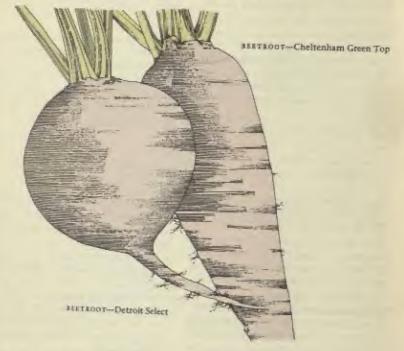
For the round or globe beet sow the seed in rows 1 ft. apart; the long varieties should be 14 ft. apart. After sowing, cover the seed by filling in the drill with the back of the rake head and then firm over the line with the rake held perpendicularly to the soil. Lastly, rake lightly to remove marks.

Make the first sowing of early globe beet about the middle of April and the second sowing about the middle of May, A third sowing about the second week in July will provide tender young roots in the autumn and early winter.

The long beet, the roots of which are allowed to reach full maturity before being harvested in the winter, is usually the main beet crop and is sown about the middle of June. GENERAL CARE

Use the sharp blade of a Dutch hoe to keep the weeds down between the rows, but be careful never to cut the roots of the beets or they will bleed and their colour will be lost. Thin out the seedlings to one per station when they are 1½ in. high, and when the roots are the size of golf balls pull out every other one, thus

keep.) Alternatively put the roots in a heap about 3 ft. high and about 3 ft. across. Cover with straw 6 in. deep and over the straw put a layer of soil 6 in. deep, and pack down with the back of a spade. When getting out the soil for this purpose, make a trench round the mound of beet to help drainage. Such a heap is called a clamp, bury or hale.



leaving the remaining roots 8 in. apart.

The roots pulled out when thinning can be used as a vegetable.

HARVESTING

Pull the early sown crops as soon as they are large enough and are required. The later roots may be lifted with a fork in November, for storing in boxes of sand or peat in a frost-proof shed. (Twist off the tops near the crown, but not too near or bleeding will result and the roots will not

RECOMMENDED VARIETIES

Bell's Non-Bleeding, a deep, blood-red tapering root of medium size which seldom bleeds when bruised.

Cheltenham Green Top, perhaps the best of the long-rooted beetroots. It stores and cooks well, and the flesh is bright red.

Early Wonder, another of the flattened globe type like Egyptian Turnip-Rooted. The roots are uniform in size and the foliage is a greeny-red colour. Admirable on shallow soils.

Egyptian Turnip-Rooted, a very early, flat-topped globe beetroot of good, deep colour. An excellent variety for sowing under cloches or ganwicks.

Detroit Select, a uniform, globular root of excellent quality. The flesh is deep red and free from white rings or zones. Nutting's Select Red, the long roots are somewhat thicker than Cheltenham Green Top and are a good deep colour. The foliage is red with a green tinge.

Obelisk, an excellent-flavoured oval, half-long beet.

Ruby Queen, smooth-skinned and uniform roots. The flesh is dark red and free from white zones.

SEAKALE BEET

This is a dual-purpose vegetable. It produces thick, ivory-white stems, often 8 in. long, with large dark green leaves above. The white part, or midrib, is served as seakale and the dark green foliage as spinach. It is also known as silver beet and as Swiss chard.

SOIL PREPARATION

Seakale beet grows well on almost any soil, but gives the longest stems and largest leaves on land that has been manured with well-rotted compost and old dung at the rate of a bucketful to the sq. yd. When the tilth is being prepared rake in fish manure with a 6 per cent potash content, or a complete fertilizer, at the rate of 4 oz. to the sq. yd. When the plants are in full growth, water every ten days with diluted Bio Humus, or some other liquid fertilizer.

Make two sowings, the first one early in May and the second about the third week in June. Sow the seed in rows 15 in, apart, and as soon as the plants are large enough to handle thin them out to 4 in, apart. Thin out again about two weeks later to 8 in, apart.

Alternatively, take out drills 1 in. deep and 15 in. apart. Sow three seeds at stations 9 in. apart along the drills. If the three seeds germinate, thin the seedlings to one per station.

GENERAL CARE

Hoe the rows to keep down the weeds and, if the weather is dry, water the rows regularly, since seakale grows rapidly in warm weather.

HARVESTING

Do not cut off the dark green leaves leaving the white stems on the plants or the stems will rot back and cause trouble. Pull off the stem and leaves in one piece. Keep pulling regularly as the leaves become ready, throughout the summer and well into the early winter. Some plants live through the winter and may be pulled again in the spring.

RECOMMENDED VALIETIES

New Giant Seakale, produces very large leaves with ivory-white prominent ribs.

Silver Kale, has large dark green leaves. Plants are bushy, and the white stems are shorter than New Giant Seakale.

BROCCOLL

There are two main types of broccoli: curding and sprouting. The curding types produce white heads like cauliflowers; the sprouting types produce numerous side shoots with tiny heads, which are either purple or white, depending on the variety.

CURDING BROCCOLI

This is sometimes known as winter cauliflower. The curds are generally a little coarser than the true summer cauliflower, Many seedsmen's catalogues list winter cauliflowers in the following groups: Autumn, Winter, Spring, Late Spring, and Early Summer.

Broccoli produces curds from the end of September until the middle of the following June. It is possible to have curds all the year round if the true cauliflower is grown as well.

SOIL PREPARATION

Broccoli will grow in almost any soil, provided that it has been well manured. The plants do best on really firm ground and, because they are planted out in the summer, it is best for them to follow a well-manured crop such as potatoes, broad beans or early peas.

If the site was well manured for the previous crop, it need be forked only very lightly, to clean up after the harvesting. After forking, tread the soil down and add fish manure with a 10 per cent potash content at 3 oz. to the sq. yd. Then give a light raking and leave the ground level.

If the soil is not limy or chalky, give it a surface dressing with carbonate of lime at 4 to 5 o2. to the sq. yd. just before planting out; if this top dressing is given, do not give nitrogen late in the season, otherwise soft growth will be encouraged

and the plants will not be hardy. A useful dressing is 5 parts by weight of hoof and horn meal, 4 parts superphosphate and 2 parts sulphate of potash, used at the rate of 4 oz. to the sq. yd.

SOWING.

Sow the seed of autumn varieties about mid-April in the north and at the end of April in the south. Sow winter varieties later, the seed of spring varieties a week after that, and seed of the really late kinds about the middle of May. Thus, succession with broccoll is assured by variety and not by successional sowings.

The seed bed need be no wider than if the transfer of the seed bed with really fine compost or sedge pear at the rate of a bucketful to the sq. yd., raking it into the top inch or two only. Take out drills 6 in, apart and 1 in, deep, and sow the seed thinly in these shallow drills. Rake the soil over lightly to cover the seeds and firm with the rake head.

PLANTING

Try to plant out as soon as the ground becomes available and before the plants in the seed bed get too long and lanky. Though in Devon and Cornwall broccoli may be planted out as early as lune, the month for main-crop planting out in other districts is July. The later kinds need to be planted out before this because they need a longer season of growth. Make the rows 2½ ft. apart and allow 2 ft. between the plants in the rows. Be sure to put a few plants in the seed border as a reserve for filling in gaps a fortnight later, if necessary.

Put the plants in, very firmly, up to their lower leaves. If the weather is dry at planting time, pour water into the holes to give the plants a good start.

GENERAL CARE

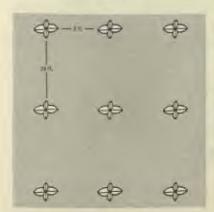
Towards the end of August or early in September, use a draw hoe to take out a furrow between the rows of plants. The broccoli will thus be earthed up slightly and the furrow will help to prevent the roots from being waterlogged.

Heeling-over is carried out in October or early November. This consists of removing the soil to a depth of 9 in. on the north side of each broccoli plant and pushing it over carefully with its head towards the north. Growing the plants at an angle protects them from the damage that can be done by early morning sun following a frost. During a hard winter, a feed of nitrate of potash at 1 oz. to the sq. yd. may be given in February.

HARVESTING

Cut the white curds as soon as they are ready and before they start to open up. If a number of broccoli plants are ready together, delay cutting some of them by breaking two or three of the larger leaves over the curds for protection.

Alternatively, pull up some plants that are ready to use and hang them upside down, in a frost-proof shed; they should keep successfully.



Planting distances for broccoli

RECOMMENDED VARIETIES

Autumn

Roscoff Extra Early, suitable for the south and south-west. White curds, September to December.

Veitch's Self-Protecting, produces large, close, pure white curds. October to November.

la inter

Early Feltham, very hardy, large, snow-white heads. January to February.

Roscoff Noel, suitable for sheltered garden. December to January.

Snow's Winter White, large creamywhite head of uniform size, February to March.

Spring

Cambridge Hardy, late. Good hardy variety for the north. April to May.

Late Feitham, pure white heads of uniform size. April to May.

Learnington, good-quality white curds. April.

Lenten Monarch, large white heads. April.

Early Summer

Midsummer, very good variety for cutting late. May to June.

Rear Guard, high quality white heads. June to July.

SPROUTING BROCCOLI

This is a very popular vegetable for the winter as the plants are hardy and the small unopened flower heads on short stems have a good flavour.

SOIL PREPARATION
As for curding broccolt.

SOWING

Sow in April or early May in a seed bed similar to that for curding broccoll.

PLANTING

Give the plants plenty of room for development, putting out the early varieties 2 ft. by 2 ft. and the late kinds 2½ ft. by 24 ft. Plant really firmly, putting plenty of water into the holes at planting time if the weather is dry.

GENERAL CARE

Keep the soil lightly hoed in the summer, but do not heel the plants over as for curding broccoli.

HARVESTING

The flowering shoots grow out from the axils. When the shoots are about 1 ft. long, cut them to within 2 in. of their base; as a result more shoots will be produced later.

Do not remove the main leaves until they turn yellow, because they give protection to the delicate shoots. Later on in the season the main leaves themselves may be eaten as a vegetable.

RECOMMENDED VARIETIES

Calabrese, sometimes known as Green

Sprouting broccoli, because the side shoots are green and often much larger than those of the normal sprouting broccoli; not, however, a winter vegetable but is available in late summer and early autumn.

Early Purple Sprouting, has small shoots with purple heads in March.

Early White Sprouting, for use in February and March. Small white heads on short shoots.

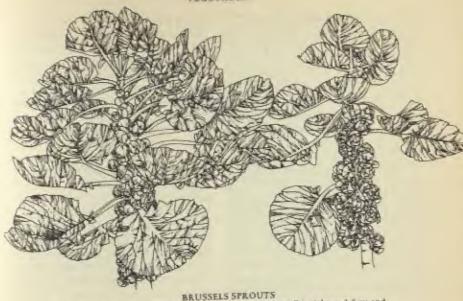
Late Purple Sprouting, similar to the Early Purple Sprouting, but is far hardier and more prolific. April to May.

Late White Sprouting, has longer shoots and is hardier than Early White Sprouting, March to April.

Nine Star Perennial, each plant produces 15 or so small creamy-white heads each year for five years. Sow seeds in May; plant out 3 ft. square in early September.



I KOCCOLI-Veitch's Self-Protecting



The sprouts on the left are of good quality; each "button" is tight and firm and is well placed on the stem. Those on the right are hadly grown, loose and broken

BRUSSELS SPROUTS

One of the most popular green vegetables in Britain, Brussels sprouts can be grown satisfactorily only in firm soil, where they can be given deep manuring and have plenty of room to develop.

SOIL PREPARATION

Dig the ground deeply in the autumn, burying (at a spade's depth at least) well-rotted dung and old compost at the rate of one and a half bucketfuls to the sq. yd. leave the soil rough for the frost and cold winds to act upon, and in the spring lork it over an inch or two deep, adding either fish manure at 4 oz. to the sq. yd. or a complete fertilizer at 4 to 6 oz. to the sq. yd. Alternatively, use a mixture of two parts hoof and horn, one part sulphate of potash, four parts bone meal, at

the rate of 4 oz. to the sq. yd. Follow this by a good treading to make the soil firm, then by a light raking to leave the surface level and the particles of soil fine.

Because the sprouts themselves need not be planted out until late May or early June, it is possible to sow lettuce in rows i ft. apart on the same site in March. It does not matter if all the lettuces have not been harvested before the sprouts are planted: the sprouts will benefit from the ground being trodden on while the lettuces are being cut.

SOWING

Sow the seeds in a sheltered seed bed in drills no deeper than 1 in., and 6 in. apart. To raise very early sprouts, sow the seed about the middle of September



PLANTING BRUSSELS SPROUTS Plant out 4- to 6-in, high plants 1 ft. sq., firm the soil and then water well

in a sheltered corner, to allow the plants to develop throughout the winter. Winter sowings have been successful as far north as Lancashire and Cheshire. To produce early sprouts in very exposed situations, sow the seed in frames in January. For normal harvesting sow in February or early March.

PLANTING

Start successional planting out about the third week in May and continue until the second week in June. Choose the largest plants (4 to 6 in. high) in the seed bed, and plant out 3 ft. square. If planted during a showery period, the sprouts will settle down quickly and well. Not only should the ground be firm but the plants should be well firmed in. If the weather is dry, water the plants in well, Do not plant weaklings or plants that have no growing point in the centre.

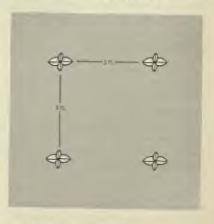
INTERCROPPING

As the rows are 3 ft. apart another crop can be interplanted. French beans are suitable, and the seed may be sown under cloches, midway between the rows of Brussels sprouts (or where the rows are to be) about mid-March. When the Brussels sprouts need the room, cut down the french bean plants to a low level with a pair of shears, leaving the roots in the ground to provide extra nitrogen for the sprouts. Use the haulms as a mulch for the Brussels sprout plants.

HARVESTING

Do not remove the big leaves of the sprouts until they are decaying and turning yellow. The heads of the plants should not be removed until the end of February, for they protect the sprouts forming below and manufacture elaborated sap which will feed them.

It is better to cut sprouts off than to break them off. At the beginning of the season start picking from the bottom of the plants and work up gradually as the sprouts themselves mature. The crop usually starts in October and is at its best in November and December. It can continue until the end of March. When the



Planting distances for Brussels sprouts

sprouts are cut off, a secondary crop is produced at the base of the sprout stems and these rather open sprouts are quite useful in years when green vegetables are scarce or if the garden is small.

RECOMMENDED VARIETIES

Be sure to buy seeds from a seeds man who specializes in Brussels sprouts, for the strain is as important as the variety. As some varieties do better than others in some localities, take his advice.

Cambridge No. 1, an early type which produces large, firm sprouts of excellent quality. Particularly suitable for autumn sowing.

Cambridge No. 3, a main-crop variety, producing large sprouts.

Cambridge No. 5, a very late variety. Heavy-cropping, large sprouts. Cambridge Special, a favourite smallbutton sprout, compact and excellent for deep freezing.

Darlington, an early dwarf variety for small gardens. Good on sandy soil. Bears firm, medium-sized sprouts.

Irish Glacier, small, dark green buttons which are easy to pick. A good sprout for quick-freezing.

Perfection, a good northern variety: plants 2½ ft, high with dark green foliage. Can be picked early in October. Excellent for freezing.

Rous Lench, a favourite in the west country. Produces prolific and excellent dark green solid sprouts.

Sanda, a medium type with small dark green sprouts, well spaced for easy picking. Excellent for freezing.

CABBAGES

Several different types of cabbage are indigenous to Great Britain—the round-headed and flat-headed varieties for spring and summer sowing, the pointed varieties for spring sowing only, the special pointed varieties for autumn and spring sowing, very large drum-head varieties (somewhat coarse for home use) and the red kinds for spring sowing.

Cabbages will grow in all kinds of soil, though the varieties that are ready for use in the spring naturally prefer a lighter soil which warms up quickly after the turn of the year and encourages the roots to grow earlier.

Where cabbages are to be planted out after a well-manured crop, as usually happens in the case of the spring cabbages, no special preparation or manuring is necessary. But when cabbage is the main crop, as in the case of the summer,

autumn and winter kinds, dig the soil over and add well-rotted compost or old dung at the rate of a bucketful to the sq. yd.

When the soil is raked level for planting out, use a balanced fish manure at the rate of 3 oz. to the sq. yd. Make certain that the soil is not acid; apply carbonate of lime at 5 oz. to the sq. yd., unless the soil is chalky.

SPRING CABBAGES

These are cabbages that are ready for use in the spring: they are not spring-sown cabbages. As they have to grow steadily throughout the winter, choose for them, if possible, a sheltered spot on really well-drained land. They prefer light soil which will warm up quickly after the turn of the year, and so will encourage the roots to get growing early. If these cabbages are planted immediately after the harvesting

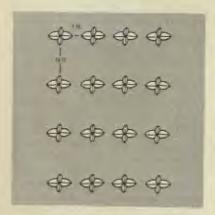
of a well-manured crop such as potatoes or peas, no special soil preparation or manuring is required. It is not even necessary or advisable to rake the soil level before planting out seedlings, because the clods of earth will give protection to the plants against cold surface winds.

SOWING

Choose a semi-shady seed bed and rake in fine sedge peat at the rate of a bucket-ful to the sq. yd. Firm the ground by treading, rake once more, and then, with the corner of the draw hoe, scratch out drills \(\frac{1}{2} \) in. deep and \(\frac{6}{2} \) in. apart. Sow the seed thinly in the drills, and rake to cover up. Firm over the top with the rake head. Sow seed about the middle of July in the north of the British Isles, and late in July or early August in the south.

PLANTING OUT

If seed was sown at the right time, the plants should be ready for planting out about the middle of September in the north and late in September in the south. Water the seed bed well the day before planting out. Lift out the plants with a hand-fork so that the roots remain



Planting distances for spring cabbages

covered with a little soil, and lay the plants in the seed bed, keeping their roots covered with damp sacking until they can be planted. With a dibber make rows of holes in the planting-out area it fr. apart, leaving 1 ft. between the holes in each row. Plant the seedlings firmly and, if the soil is very dry, or there is no rain, pour a cupful of water into the dibber hole at planting time. Put the plants 6 in. apart in the rows, and then in February cut every other cabbage for use as greens.

GENERAL CARE

Until the end of October, hoe between the rows to keep down weeds. In early November, if the soil is heavy, make a 4-in. furrow between the rows to carry away excess moisture. In early spring, and only after growth has started naturally, give a top dressing of nitrate of soda, sulphate of ammonia or dried blood at the rate of ½ oz. per plant. If, however, the plants have been set at 6 in. apart do not top dress until alternate plants have been cut, and then apply the dressing at 3 oz. to the sq. yd. Spring cabbage must be encouraged to heart early in the spring.

RECOMMENDED VARIETIES

Early Durham, medium-sized, pointed hearts. Very early. No outer leaves.

Early Offenham Selected, pointed head, uniform in shape and dark in colour. Notably free from outer leaves. Early,

First Early Market 218, solid, wellpointed, firm hearts. Very early.

Harbinger, small, pointed dark green heads. Very early.

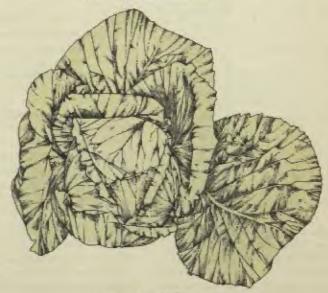
Wheeler's Imperial, solid hearts, dwarf.

SUMMER AND AUTUMN CABBAGES

The seed bed may be in any odd spot, but to ensure good roots, fork in fine compost or sedge peat at a bucketful to the sq. yd. before sowing. Afterwards apply



CARRAGE—Christmas Drumhead



CARRAGE-January King

carbonate of lime at 4 oz. to the sq. yd. unless the ground is already chalky. A complete fertilizer can be used and forked in at the rate of 4 oz. to the sq. yd.

SOWING

Sow the seed about the middle of March, and to ensure succession, make a second sowing a fortnight later.

PLANTING

The plants will not be ready for putting out in their final positions until the third week in May or early June. Make the rows 2 ft. apart and allow 1½ ft. between the plants.

EARLY PLANTS

To have very early well-hearted cabbages in June, sow the seed of a variety such as Primo early in February in a cold frame in rows 6 in, apart. When the plants come through, some ventilation will be necessary on warm days. Increase ventilation of the frame in March, and early in April take the lights off altogether for a day or two and then lift the plants carefully, putting them out in their permanent positions in rows 1½ ft. apart, allowing 1 ft. between the plants. Cabbages are usually planted with a dibber.

GENERAL CARE

Use a Dutch hoe lightly between the rows, no deeper than \(\frac{1}{2} \) in,, to keep down weeds. Watch out for greenfly, whitefly and caterpillars and, if any of these pests appear, spray the plants thoroughly with liquid derris or a proprietary insecticide.

HARVESTING

Cut the cabbages as soon as they have good hearts. Pull up the stumps, put them on the compost heap and sprinkle them with fish manure.

RECOMMENDED VARIETIES.

Greyhound, the earliest-hearting cabbage. Conical-headed, spring-sown.

Primo, a very early round-headed cabbage, excellent for sowing in frames in February. Velocity, early, round, flattened; with medium-sized heads on short stems.

Winnigstadt, a grey-green compact cabbage, with solid, pointed heads.

WINTER CABBAGES

50WING

Sow the seed as for summer and autumn cabbages. In parts of the north, it is necessary to sow the seed in the middle of March because of the shorter season, but in districts where the weather is mild it can be sown in April or early May.

To save time and labour, an alternative way is to sow the seed where the cabbages are to grow; this avoids the check to the plants which normally results from planting out, especially during a hot, dry period. Sow three seeds every 2 ft. along a drill and thin out the plants later to one per station. So as not to waste room, sow radish seed between the rows of cabbage seed as a catch crop.

PLANTING

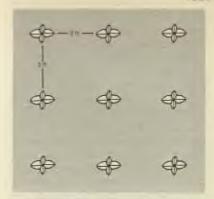
In July, plant the seedlings out firmly, allowing 2 ft, between the plants. It is invariably necessary to pour water into the holes at planting time, or to put overhead irrigation apparatus in position after planting to give the plants a good soaking. Watch out for attacks of black flea beetles after planting; combat them by dusting liberally with fine derris, lindane or D.D.T.

HARVESTING

Winter cabbage will be ready for cutting any time between November and the end of February depending on the variety sown. Once the cold weather starts it will be a long time before the hearting cabbages burst and go to seed.

RECOMMENDED VARIETIES

Christmas Drumhead, usually used long before Christmas. Produces solid hearts. Almost flat.



Planting distances for winter cabbages

January King, probably the hardiest cabbage grown, has savoy-like leaves with a bluish tint. Remarkably frost resistant. December to January.

RED CABBAGES

SOWING

Sow the seed in the same way as for summer cabbage.

For particularly large red pickling cabbages, sow in a seed bed in the middle of August and plant out the following April. For red cooking cabbages, sow the seeds in April and put out the plants at the end of May.

PLANTING

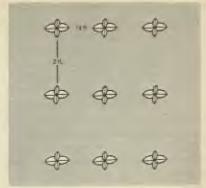
Plant out the seedlings when they are 3 or 4 in. high, in rows 2 ft. apart, allowing 1½ ft. between the plants. Plant firmly, getting the stems well down with the base of the leaves touching the surface of the soil.

GENERAL CARE

Until the winter makes it unnecessary, hoe lightly among the plants.

HARVESTING

It improves the flavour of red cabbages if they get a touch of frost, so do not pickle them until December or January. Red cabbages may be cut for cooking as soon as they are large enough.



Planting distances for red cabbages

RECOMMENDED VARIETIES

Blood Red similar to Dwarf Dutch.

Dwarf Dutch, an early compact variety. Solid hearts of good colour.

The Lydiate, one of the largest; produces very firm hearts. Hardy and suitable for the porth.

Niggerhead, one of the best pickling kinds, produces a small compact head. An erect grower, easy to hoe between.

Ruby Red, one of the earlier varieties. Must be sown in the spring and not in August. Suits the northern midlands.

Stockley's Giant Red, perhaps the deepest red cabbage grown. Few outside leaves. Solid, round hearts.

COLEWORTS or COLLARDS

These are a type of small, extremely hardy cabbage, which can be cut as "greens" or left to form hearts. The variety Hardy Green forms solid, medium-sized hearts and matures comparatively quickly.

SOWING

Sow the seeds at any time from the middle of March to the middle of August. If a seed bed is used, plant out a month later, I ft. apart each way. If the seeds are sown where the plants are to grow, sprinkle them in rows I ft. apart in July, and when

the plants are 1 in, high, thin them out to 6-in, intervals and a fortnight later to 1 ft, apart. Small hearting cabbages will then be ready in the autumn and early winter, and will prove most useful before the spring cabbages are available.

SAVOY CABBAGES

Savoys are a very hardy member of the cabbage family. Their flavour is improved by a touch of frost so they are regarded as winter cabbages. They do well in the north of England.

SOIL PREPARATION

Savoys will grow on poor soils but they do best on heavy loams. It is usual to plant them after early potatoes or peas, when it is not necessary to give any manure.

Fork or rake the soil well and add a fish manure at 3 oz. to the sq. yd. Apply lime as a top dressing at 6 or 7 oz. to the sq. yd. unless the soil is already chalky. In early August a tonic may be given to the plants in the form of a top dressing of nitrate of soda or dried blood at 1 oz. to the yard run.

SOWING

In March prepare a seed bed 2 ft. wide in a sunny, warm position. Tread the bed firm and then rake it to make the soil fine, adding fine sedge peat at the rate of a bucketful to the sq. yd. With the corner of a draw hoe take out drills 1 in. deep and 8 in. apart and sow the seed thinly in these drills. Make the first sowing about the third week of March, the second sowing in the second week of April and the third sowing during the fourth week

of April. For a good succession of savoys through the winter, start with the earliermaturing varieties and end with the late varieties.

PLANTING

Plant out the earlier kinds at the end of June and the later kinds at the end of July. Make the rows 2 ft. apart and allow 2 ft. between the plants. If dwarf varieties are grown, they may be planted as close as 1½ ft. with 15 in. between the rows. Plant with a dibber, making a good hole so that the plants will be really firm. If the weather is dry, it is important to put water in the hole at planting-out time.

GENERAL CARE

Hoe regularly to keep down weeds.

HARVESTING

Cut the savoys for use when they are fully hearted. Do not cut until the hearts are quite firm otherwise the flavour is inferior.

Do not allow the stalks to remain in the ground after cutting because they will rob the soil of plant foods.

RECOMMENDED VARIETIES

Dwarf

Early Dwarf Ulm, dark green foliage with solid round hearts. September to October.

Large

Ormskirk Early, heavy cropping. Large hearts. September to October.

Ormskirk Extra Late, dark green, Good hearts. March to April.

Orniskirk Late Green, very hardy. Large hearts, January to February.

Ormskirk Medium, large hearts with good flavour. November to December,

CARDOONS

The cardoon is an aristocrat of the vegetable garden. It is a relation of the globe artichoke and was introduced into Britain late in the 16th century. To blanch the stems it is grown in trenches like celery.

SOIL PREPARATION

Cardoons can be grown successfully in almost any soil, provided that well-rotted manure or organic matter is raked into the bottom of the trench at the rate of one large bucketful to the yard run when it is prepared in the spring. At the same time apply fish manure at 3 oz. to the sq. yd., or sprinkle a complete fertilizer on the bottom of the trench at the rate of 2 oz. to the yard run.

The trenches into which the plants will go should be prepared at the time the seed is sown. They should be 8 in. wide and 1 ft. deep and run north and south if possible. Fork the manure into the bottom of the trench, put back 1 in. of soil and tread down well.

SOWING

As cardoons need a long season of growth the seed should be sown late in March in a greenhouse kept at a temperature of 55° F. (13° C.). Use John Innes seed compost or Eclipse No-Soil compost pressed down firmly in 3-in. pots, and sow the seeds three to a pot pushing them in 1 in. apart and 1 in. deep. After watering, put the pots on the staging of the greenhouse, covering them with a sheet of glass or a piece of newspaper.

Wipe the underside of the glass every day and, when the seedlings are through, remove the glass altogether. A week later thin the seedlings down to one per pot and grow them on in the greenhouse until about the beginning of May. Pur the pots out in a cold frame for the plants to harden off gradually before planting out as for celery. Where a greenhouse is not available, sow three seeds every 1½ ft. in the bottom of the trench early in May; the seedlings should be thinned down to one per station later.

PLANTING

Set the plants out 11 ft. apart in the bottom of the trench and follow the planting by a good flooding with water. Cardoons, like celery, need an abundance of water.

GENERAL CARE

Feed the plants with Liquinure or Bio Humus once every ten days throughout the season. Start this feeding at the end of June and finish at the end of September; on each occasion apply the diluted feed at the rate of a quart per yard run.

Early in October carry out the first earthing up. Remove the yellowing leaves at the base of the plants, then grip the plants tightly and bring the soil up to them firmly. As some of the plants have prickly stems, it is advisable to wear gloves when earthing up.

Carry out the second earthing about the third week of October. It should then be possible to pack the earth down with the back of a spade so that it forms a steep bank sloping at an angle of 45° on either side of the plants, to carry the excess moisture away.

If the soil is drawn right up to the bottom leaves it will blanch the stems and make them sweet. The first plants will be ready for use three weeks after the final earthing up.

The light can also be kept away from the stems if collars of brown paper 6 in. wide are tied round each plant just below the bottom leaves, before the earthing up. Another method of earthing up is to slip 6-in, agricultural drain pipes over the tops of the plants, and then pour silver sand into the pipes to reach as far as the bottom leaves.

HARVESTING

Lift the cardoons as they are needed, but be sure to put back the soil so that the remaining plants are kept in the dark. VARIETIES

There are no definite British varieties. Ask for French or Spanish cardoon seed.

For flavour, length of stems and hardiness, the French cardoon is preferable to the Spanish, but the latter is not prickly and is therefore easier to work with.

CARROTS

Carrots may be grown in frames, under cloches or ganwicks or in the open. There are varieties with long tapering roots, varieties that are long but stump-rooted; short and intermediate stump-rooted kinds, and varieties like Guerande that are blunt-ended and broad-shouldered. It is important to choose a kind to suit the type of soil and cultivation. For instance, for shallow soils stump-rooted varieties are preferable.

SOIL PREPARATION

The best carrots are grown on deep, sandy loams such as are found in parts of Norfolk, Worcestershire, Kent, Surrey and Shropshire. Early carrots require sandy soil because it warms up quickly in the spring. Good carrots can, of course, be grown on much heavier soils—especially the main-crop varieties. Dig over heavy soil and leave it rough through the winter; it is more easily forked down in the spring after being weathered.

Do not dig in fresh manure for carrots, for it is likely to make the roots fork instead of growing long and straight; if they have to search for food they grow a better shape. Use land that was well manured for the previous season's crop. If the land is in poor condition, apply a complete fertilizer at the rate of 4 oz. to the sq. yd. Rake the fertilizer into the top ½ in. of soil a few days before sowing the seed.

SOWING

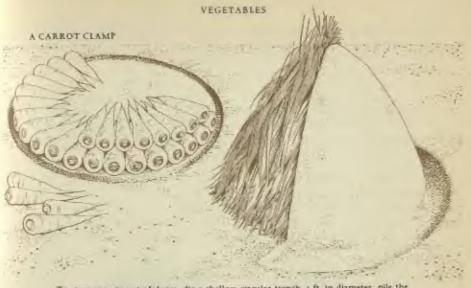
Carrots will not germinate in cold, wet soil. The earliest sowings in March should be made on a sunny, south border or in warm, sheltered, sunny spots. The alternative is to put cloches or ganwicks in position over a strip of land early in March and then, having thus warmed the soil, to sow the carrots about the third week in March. After germination, the cloches can either be left in position or removed to cover some other crop.

Make successional sowings—perhaps two short rows at a time—once a fortnight from the middle of March until the middle of April.

Mix the seed with an equal quantity of sand or fine sedge peat, so that a 4-in, deep sowing can be made thinly, thus avoiding the need to thin the seed-lings later. After sowing, rake lightly to cover the seed.

Carrots that are to be stored and used in the winter should be sown about the middle of April in drills 3 in. deep and 15 in. apart.

There is a third, main sowing period about the middle of July. At this time sow the quick-maturing varieties to ensure tender young roots for pulling in the autumn and early winter. This late sowing usually escapes carrot fly because this pest is at its worst early in June. Make this late sowing thirdy in rows \(\frac{1}{2}\) in, deep and I ft. apart.



To store carrots out-of-doors, dig a shallow circular trench, 3 ft. in diameter, pile the carrots to a height of 3 ft. in the form of a cone, and cover the mound with layers of straw and soil, A twisted tuft of straw through the soil provides ventilation

CARROT FLY

Because females of the carrot fly lay their eggs on carrot seedlings at the time when the main crop would usually be thinned, sow three seeds every 6 in. along the rows to reduce the need for thinning. As an alternative, the new, pelleted seeds can be sown. These have a special coating round each seed, containing a carrot-fly repellent as well as plant foods, and as the pellets are large and easy to handle, thin sowing can be assured.

GENERAL CARE

Use a Dutch hoe very lightly between the rows and hand weed as required. If thinning is necessary, try to do it in the evening, preferably in a showery spell.

Thinning is best done in two stages. On the first occasion, thin to 3 in, apart when the plants are 1 in, high and easy to handle. Thin again four weeks later to 6 in, apart; by that time the carrot thinnings should be fit to use even though

they are small. Dust between the rows with a gamma dust at an ounce to the yard run to keep the carrot flies away. Take great care not to let the dust drift on to the plants or they will be tainted. Do not leave the thinnings lying about, because the smell, as they decay, attracts carrot flies. Put them on the compost heap and sprinkle with a little fish manure; they will rot down and the smell of the carrots will be lost. After thinning, work the soil up to the plants in the rows and firm it with the boe blade, as this helps to discourage carrot flies.

HARVESTING

Pull the early varieties when they are young and tender but large enough to use. The pulling can continue over many weeks. Treat the July-sown varieties in a similar manner, but treat the main crop differently. Dig the roots up carefully before the winter frosts set in and grade the crop. Use split and damaged roots as soon as possible for they will not keep.

VEGETABLES

Store perfect roots in deep boxes, putting in a layer of roots, a 1-in, layer of sand, another layer of roots and so on. The boxes can then be stored indoors in a cool, dry place.

They can also be stored out-of-doors, like potatoes, in a clamp, it is important that the heap should not be more than a ft. high and a ft. wide at the base. Allow a 4-in, thick, twisted tuft of straw to peep out through the soil at the top of the clamp to provide ventilation.

RECOMMENDED VARIETIES

Varieties can be divided into three classes: the short-rooted; the intermediaterooted or half-longs; and the longrooted. Few long-rooted kinds are grown for general use; they are usually grown for exhibition.

Shore

Early Horn, produces a good early crop. Stump-rooted.

French Forcing, roots almost spherical, orange-red flesh, crisp. Excellent for sowing in frames or under cloches.

Guerande, broad-shouldered, blunt ended, easily pulled. Orange-red. Early. Excellent in sandy dry soils.

Intermediate

Amsterdam Forcing, roots 5 in. long, good under cloches. Excellent quality.



CARROT-Long Red Surrey

Autumn King, heavy stump-rooted, main-crop type. Rich, deep orange flesh.

Chantenay Red Core, half-long, stump-rooted. Early thick roots. Deep orange.

Early Nantes, long stump-rooted variety Small indistinct core. Orangescarlet, Early.

lames's Scarlet Intermediate, the most popular main-crop variety, with tapering roots. Good texture and colour.

New Red Intermediate, said to be an improvement on James's Scarlet Intermediate. Excellent in colour and quality.

St. Valery, a main-crop variety with long, red uniform roots of superb quality. Crops and keeps well.

Long Red Surrey, huge, tapering, deep orange roots.

CAULIFLOWERS

The true summer cauliflower is harvested between June and October,

It is not an easy vegetable to grow. It should never be planted too deeply; it requires plenty of moisture and needs to grow rapidly and unchecked. When the plants are checked in any way, they produce small white curds, often no bigger than a half-crown, which are almost useless.

SOIL PREPARATION

Choose a plot of sandy loam; dig to a spade's depth and enrich it with well-rotted manure or old compost at the rate of one bucketful to the sq. yd. It is an advantage if cauliflowers follow a well-manured crop like potatoes or peas; the ground is firmer, and much of the manure which was incorporated for the previous crop will have fully decomposed and will provide a cool root run. If the soil is not already chalky or limy after the initial soil preparation, apply carbonate of lime as a top dressing at the rate of 5 oz, to the sq. yd.

Ten days before planting, apply an organic fertilizer such as meat and bone meal or fish manure at the rate of 3 oz. to the sq. yd., raking in lightly. In addition, wood ash may be given at the rate of 1 lb. to the sq. yd., or sulphate of potash at 1 oz. to the sq. yd.

SOWING

Although a succession of broccoli can be maintained by sowing suitable varieties in the correct sequence, a succession of cauliflowers can be ensured by making three different sowings, Make the first in September, in frames, in soil which is made up as much like John Innes compost as possible. Sow the seed thinly by scattering (1/16 oz. of seed will produce at least 200 plants), and, if the compost is moist and firm, there will be no need to water until after germination has taken place. Sift a little compost over the seeds through a 1-in, mesh sieve. Keep the frame closed until germination takes place and then allow a little ventilation on mild days. When it is frosty keep the frame closed.

Make the second sowing in late January or early February in boxes containing John Innes seed compost. Keep the boxes on the staging of the greenhouse at a temperature of 50° F. (10° C.). When the seedlings come through, prick them out 1 in, square into other boxes containing similar soil. Let them grow on in their boxes, keeping them as near the glass of the greenhouse as possible to avoid letting them get too drawn. About the beginning of March put the boxes out loto a frame to harden the plants off;



HOW TO PROTECT CAULIFLOWER HEADS

Cauliflowers that are ready but not wanted immediately may be left in the ground. Break
the mid-ribs of two or three of the centre leaves on each head, and bend the leaves over so
that they cover the curd like an umbrella and protect it until it is required.

when the plants are used to the outside air—by about the beginning of April—put them out where they are to grow.

The third and normal sowing for cauliflowers is made early in April, allowing \(\frac{1}{2} \) dram of seed for 100 plants. Prepare a seed bed in a sunny, sheltered spot by applying a fine sedge peat at the rate of a large bucketful to the sq. yd. and raking the soil down level, leaving the top particles of soil finer than grains of wheat. Take out \(\frac{1}{2} \)-in. drills with the corner of the draw hoe. After covering the seeds it is important to firm the soil over; this can be done with the head of the rake.

When the seedlings are through, dust with a B.H.C. powder, D.D.T. or lindane to prevent attacks by the black flea beetle. Whenever cauliflowers are transplanted it is most important to do the work shallowly, for if the bases of the leaves are buried a deformity called "blindness" occurs and the plants grow without real centres and consequently no curds develop. For this reason it is a

good idea to pot the plants in 3-in, pots when they are about 2 in, high, so that when they are put out into the garden there will be a minimum of disturbance to the root ball.

FLANTING

Plant out the earliest plants—those raised from autumn sowings—in late March, t ft. square. Put out the January-sown plants about the middle of April, 2 ft. by 8 in. Plants from sowings made out-of-doors are not ready to be put out until the third week in June or in July, when they should be planted 2 ft. square. It is important to plant shallowly and firmly. GENERAL CARE

As in dry periods it is invariably necessary to irrigate cauliflowers, it is not advisable to attempt to grow the crop unless facilities for providing water are available, especially if the soil is quick-drying. In dry weather the use of a square-area rainer for an hour or so once a week will avoid the need for much watering by hose or can.

Soot, which is particularly useful for

cauliflowers, may be given at 5 oz. to the sq. yd. when the plants have been in the soil a month. A second dressing of soot may be given three weeks later. Alternatively apply 2 oz. of dried blood to the sq. yd. These feeds ensure that the plants have the rapid steady growth which results in good, white curds.

HARVESTING

Cut the cauliflowers early in the morning, if possible, while the curds are moist with dew. If a number of curds appear to be ready at the same time, break the midribs of two or three of the centre leaves on each plant so that they cover the curd like an umbrella and protect it for a few days until it is required. If this does not hold back the curds sufficiently, pull up the plants, including the roots, when they are ready for use and hang them upside down in the potting shed; they will then keep for about three weeks.

RECOMMENDED VARIETIES

For unitumn sowing

All the Year Round, a dwarf variety with large, compact heads of pure white. Cambridge Early Allhead No. 7, of compact dwarf habit producing large heads.

Early London, is classed as a second early. Produces large heads.

Snowball, very early, dwarf compact heads; suitable for growing in frames or in the open.

For January, February sowing

Feltham Forcing, has upright foliage and large heads. Dwarf variety.

White King, early, medium-large with solid heads. Well protected by foliage. Uniform in shape and size.

For outdoor sowing

Early Veitch's Autumn Giant, large, firm, protected heads. Ready for cutting in September.

Morse's November, a good size caultflower for November.

Veitch's Autumn Giant, a reliable variety with heads of splendid quality. Matures in October.

Veitch's Self-Protecting, large, white heads, well protected. Ready for cutting November or December.

CELERIAC or TURNIP-ROOTED CELERY

Celeriac is really a swollen stem produced on the surface of the ground and it grows like a root crop. It looks like a very rough turnip and can be grown to quite a large size without being coarse. It is hardy and a good substitute for celery.

SOIL PREPARATION

Celeriac grows best in soil enriched with plenty of organic matter and will follow well after a crop like potatoes or peas. In this case fork the soil over lightly in April, adding old compost or well-rotted dung at the rate of one large barrowful to 8 sq. yds. Allow the ground to settle until a fortnight before putting out the plants.

At that time, fork in sedge peat 3 in. deep at the rate of one bucketful to the sq. yd., and give a good treading. Also, apply fish manure at 3 oz. to the sq. yd., or fork in a complete fertilizer at the rate of 4 to 5 oz. to the sq. yd.

SOWING

To grow good roots the seed should be sown during February in boxes of John Innes seed compost or Eclipse No-Soil compost in a greenhouse, with the temperature maintained at 65° F. (18° C.). Press down the compost level and firm, and as the seed is so small, sprinkle it thinly over the top. Sift a little more of

the compost over the top through an in. mesh sieve, or cover with a sprinkling of silver sand. After watering through the fine rose of a watering-can, place the boxes on the staging of the greenhouse and cover them with a sheet of glass or newspaper. Wipe the underside of the glass every morning and when the seedlings are through, remove it altogether.

When the seedlings are 1 in. high, prick them out, i in spart, into other boxes containing similar compost. A week later place these boxes on shelving nearer the glass. Keep them in the greenhouse for another two or three weeks, and then put them into a cold frame to harden off. A week later plant them out.

PLANTING

Rake the surface level and plant the seedlings out 14 ft. apart, with 1 ft. between the rows so that the roots are buried and the leaves are just resting on the soil surface. Shallow but firm planting is necessary as the swollen stems are produced above soil level.

GENERAL CARE

Hoe lightly between the rows to keep down weeds, and tend to draw the soil

away from the plants rather than towards them. In early November, begin drawing the soil towards the swelling stems to help blanch them and to give them protection.

If any side shoots or suckers are formed near the base of the plant in the early summer, remove them immediately.

The roots of celeriac will be small until they start to swell in late September or October

HARVESTING

Dig up the roots as they are needed in the winter

LECOMMENDED VARIETIES

Claudia, a short-leaved strain with completely globular roots. Extremely smooth and practically without side shoots

Geneva 10, a popular Swiss variety. Roots are smooth and slightly conical. Foliage is short and spread out.

Giant Prague, a large, well-flavoured, turnip-shaped celeriae which can grow to a weight of 4 lb.

Marble Ball, has big roots. Average size, strong foliage. Resistant to disease and keeps well.

CELERY

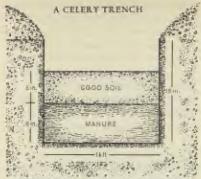
SOIL PREPARATION

Because celery requires a good deal of water, it does best in soil which is retentive of moisture-like the peaty soil found in the fen districts of Lincolnshire.

In December or January, if the weather is favourable, dig out a trench 14 ft. wide and 16 in, deep and throw the soil on either side of the trench equally so that two ridges are formed. Pat down the tops of these ridges with the back of the spade so that they are level, and sow

along them a catch crop of radish, lettuce, spinach or even french beans. In this way the trench soil is not wasted. If more than one trench is needed, dig the next one at least 14 ft. away.

into the bottom of the trench put a 6-in, layer of old dung or well-wetted farmyard manure. On top of this thick base of organic matter put a 5-in, layer of good soil and allow it to settle to within about 6 in. of the surface level. Then apply fish manure over the soil at the rate of 4 oz. to the yard run. During the



Dig a trench if ft. wide and 16 in. deep, and throw the soil on either side to form two ridges. Then place a 6-in. layer of manure in the trench followed by a j-in. layer of good soil

growing season apply Liquinure every few days using a 2-gal, watering-can for a 2-yard run.

SOWING

Because celery is liable to the seed-borne blight disease, it is important to buy disease-free seed from a reliable seedsman. The alternative is to sterilize the seed by immersing it for three hours in a 10 per cent solution of formaldehyde and then drying it off very slowly.

Make the earliest seed sowing about the middle of February. Sow in boxes of Eclipse No-Soil or John Innes seed compost at a temperature of 60 to 65° F. (16 to 18° C.) in a greenhouse. Because the seed is tiny it should be hardly covered before it is pressed down with a wooden presser. into the soil. Cover the box with a sheet of glass or piece of newspaper, If glass is used, remove it each day for wiping and, when the seedlings are through, remove it altogether. When the seedlings are about 4 in. high, prick them out 3 in. apart into boxes (at least 3 in. deep) filled with John Innes potting compost No. 1. Press the compost down firmly in the boxes and rake level. These greenhouseraised plants need to be hardened off, so

put them out in cold frames a month before they are planted out.

If a greenhouse is not used, the seed can be sown under cloches or ganwicks out-of-doors late in March or early April. Incorporate fine sedge peat at 2 bucketfuls to the sq. yd. and rake the soil level. To warm up the soil put the cloches or ganwicks in position a fortnight before sowing. Sow the seed thinly and evenly over the soil and sift a little John Innes compost over the top through an 4-in. mesh sieve. Press the soil down lightly. Cover the glass of the cloches or ganwicks to exclude light during the day until germination takes place. Leave the seedlings to grow under the glass, thinning them as necessary, until it is time to plant them out in the trenches.

PLANTING

In early June, when the seedlings are 3 or 4 in high, plant them out in trenches. Make holes with a trowel 1 ft. apart in the centre of the bottom of the trench, and take care to firm the roots of the plants in well. Half-fill the trench with water after planting to encourage firmness, especially in the case of loamy or heavy soils.

GENERAL CARE

If the weather is dry, soak the trench again ten days after planting out, because the roots of celery must never be allowed to dry out. A month after planting out begin feeding the row with liquid Bio Humus or Liquinure every ten days. Keep the ridges hoed and free from weeds and remove any side growths or "suckers" coming up from the base of the plants, as they are valueless. Because leaf spot or leaf blight disease may break out, it is advisable to spray with a copper fungicide three times during the growing season at fortnightly intervals, starting towards the end of August.

Some protection should be given to

late celery plants in the winter. In December, therefore, cover the tops with bracken or dry straw, or if barn cloches are available, put them over the tops of the celery trenches. It is important to stop rain trickling down into the celery hearts, otherwise they may start to rot.

EARTHING UP

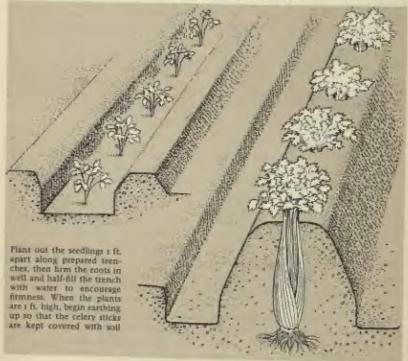
The heaviest work in growing celery is earthing up. Start about the middle of August when the earliest plants are 1 ft, high. Clear the catch crop from the tops of the ridges and fork the soil a little to pulverize it finely. Firm this into the trenches to a depth of 6 in., to prevent the soil falling into the centres of plants or between the stems. Grip each plant

firmly with one hand, and build up the soil round it with the other.

Carry out the next earthing up three weeks or a month later: once more fork the earth on the ridges until it is fine and then draw it up with a draw hoe towards the plant stems as high as the bottom leaves. Pat the sides of the earthed up ridges with the back of a spade so that they are left sloping smoothly away from the plants. Rain will not penetrate into the plants but will run away down the smooth sides. Make a third earthing up in October. At each earthing up make sure that the ridges are smooth and steep.

It is generally considered that if the soil touches the celery sticks they will

PLANTING AND EARTHING UP CELERY



have a better flavour. If the plants are being grown for show, wrap each plant in paper before the soil is drawn up, to keep the stems clean and white.

To save gripping the stems a strong rubber band can be slipped over each celery plant. As the earthing up progresses, move the rubber band up a little higher. Alternatively the stems may be tied with raffia.

HARVESTING

Do not use celery until the stems are white; this is usually at least eight weeks after the first earthing up. As each celery plant is dug up for use, the soil should be replaced so that the adjacent plant is not exposed to light which will turn it green. Shake the soil from the plant and put the roots on the compost heap.

RECOMMENDED VARIETIES

There are three main types of celeryred, pink and white. In all cases be sure to buy sterilized seed.

Pink

Clayworth Prize Pink, has crisp heads of good quality. Medium size. Does not go to seed as quickly as other kinds. Red

Standard Bearer Red, has crisp, solid heads of excellent flavour, Late.

White

Clandon White, is popular because it is reasonably immune from disease. Good flavour.

Sandringham White, has solid, dense heads of strong flavour. Late and good.

Wright's Giant White, a tall, vigorous grower with solid, crisp heads.

Wright's Grove Giant White, is more resistant to frost than any other kind.

SELF-BLANCHING CELERY

This is a type of early celery that is less hardy and has less flavour than the normal kind. It can be grown for use only in September and October, and has to be cleared before there is any serious risk of frost. This celery can be grown on the flat and does not need earthing up.

SOIL PREPARATION

Dig over a strip of ground and add wellrotted compost or old dung at the rate of one large bucketful to the yard run. A week before planting, lightly rake in a fish manure with a 5 per cent potash content at the rate of 4 oz. to the sq. yd.

SOWING

Because the plants are quick to mature, do not sow the seed before the middle of March. Sowing is otherwise the same as for celery.

PLANTING

Instead of putting the plants out in rows, plant in a square or patch, spacing the plants out 9 in. apart each way. Thus the plants will shade each other and help to keep the stems white. Plant out firmly at the end of June or the beginning of July and flood the ground after planting.

GENERAL CARE

Keep the plants growing steadily at all costs: if the weather is dry, use a square-area rainer to give artificial rain once a week, or water with the hose as and when necessary. Because the plants grow so close, weeds cannot grow. Put straw among the plants at the end of August to help keep the sterns white.

HARVESTING

Start to use the plants at the end of August. As one plant is removed from the end of the plot, fill in with straw to keep light from the remaining plants. As the celery does not keep well, use it immediately.

RECOMMENDED VARIETIES

Golden Plume, a French variety that is not easy to obtain. It is disease-resistant and non-bolting.

Golden Self-Blanching, a compact dwarf with solid heads and yellowing leaves. Generally free from stringiness.

CHICORY

Chicory is grown as a salad crop, and is forced in the dark. This chicory should not be confused with the blue-flowered, wild chicory seen in hedgerows and herbaceous borders, nor with Magdeburg chicory, the thick roots of which are roasted and blended with coffee.

SOIL PREPARATION

Chicory does best on a rich, light, loamy soil, but will grow on other soils if they are liberally enriched with fully decayed animal manure or a good compost. In the spring, dig in one of these organic manures at the rate of one large bucketful to the sq. yd. Then, as the ground is forked down lightly and trodden firm, apply a fish manure with a 6 per cent potash content at 3 oz. to the sq. yd. If the ground is not chalky or limy, cover the surface with carbonate of lime at 6 oz. to the sq. yd.

SOWING

If the ground is prepared early, it may first be used for a crop of radish, spinach or lettuce. In late May in the north and early June in the south, sow the seed thinly in drills 1 in. deep and in rows 1½ ft. apart. Three weeks later thin the seedlings down to 1-ft. intervals.

For "station sowing", sow three seeds together at 1-ft. intervals along the drills, and sow radish seed as an inter-crop between the stations. Rake the ground lightly to cover the seed and firm heavily with a rake head over the drills to make certain the seed is firm.

GENERAL CARE

There is little to do in the summer and autumn other than to hoe lightly with a Dutch hoe to a depth of ½ in., in order to provide a dust mulch and to keep down the weeds. Chicory is naturally very

deep-rooted and usually finds its own water.

Lift roots in October. November and December for forcing. Store in a frostproof shed, and in the following few weeks force a small number at a time. To force chicory, cut off the tops to within an inch of the crown; pot up 2 to 3 in. apart in any ordinary fine soil (say four roots to an 8-in, pot) with the crowns 1 in, above the soil. Place the pots under the staging of the greenhouse or in a heated frame where a temperature of 50° F. (10° C.) can be maintained. Put an upturned pot of the same size over each pot, remembering to plug the drainage hole with a cork. Tack sacking to the edge of the staging to form a complete screen. The result of encouraging the plants to grow again in heat and complete darkness is that they produce fine hearts of golden leaves, known as "chicons".

Cut the hearted chicons when they are about 6 in. long. The chicons are usually ready about three to five weeks after forcing begins. To keep up a succession of chicons during the winter, put a dozen or so roots every week.

If the roots are left in the pots, there will be a second crop of leaves, but these will be quite small and will not form another heart. Often, however, they are worth gathering, especially when salads are scarce in January or February. At the end of the second cutting, the roots are useless; chop them up and put them on the compost heap.

RECOMMENDED VARIETY

Whitloof de Brussels, bears large, thickstemmed leaves in the summer and produces long golden chicons when blanched.

CORN SALAD

Sometimes called "lamb's lettuce" or the "salad of the priest", corn salad looks like forget-me-nots when it is growing—without the blue flowers. The leaves are eaten raw in salads.

SOIL PREPARATION

Corn salad will grow on most soils but for better results fork in one-year-old animal manure or fully composted vegetable waste at one good bucketful to the sq. yd. Fish manure or a complete fertilizer can be added at the same time, at 4 oz. to the sq. yd. Finally, just before seed sowing, dust the soil with lime.

SOWING

Because corn salad grows largely in the autumn and early winter, choose a warm, sunny position and, having raked the soil down finely, sow the seed thinly in drills \(\frac{3}{4}\) in, deep and 1 ft. apart. To ensure a succession of supply, start seed sowing in August and continue once a fortnight until the end of September. When the seedlings are large enough to handle, thin them out to 9 in, apart in

the drills; excess seedlings may be transplanted to fresh drills if desired.

GENERAL CARE

Use a Dutch hoe lightly between the rows, and in the late summer, if it is very dry, use overhead irrigation apparatus once a week for 43 minutes.

HARVESTING

The usual method is to pull up whole plants and use all the leaves at one time; when the plants have been grown quickly the leaves are very tender. Alternatively, if the seedlings are first thinned out to $4\frac{1}{2}$ in., and then thinned later to 9 in. apart when the plants need extra room, the thinnings are particularly tasty.

RECOMMENDED VARIETIES

French Cabbaging, very hardy. Dark green leaves in attractive rosettes.

Italian Lettuce Leaved, only suitable for the south and south-west. Excellent flavour.

Large-Seeded English, very hardy. Large greyish-green leaves, Particularly suited to the Midlands.

RIDGE CUCUMBERS

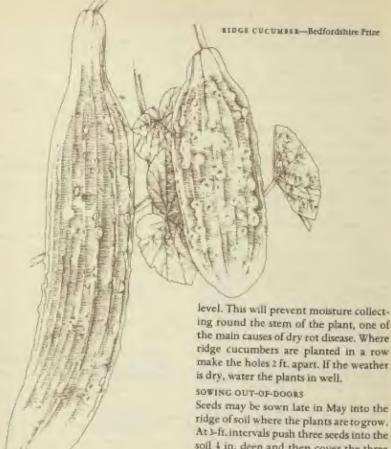
Ridge cucumbers may be started in a greenhouse or grown entirely out-of-doors. For greenhouse sowing see The Use of Glass in the Garden.

SOIL PREPARATION .

All cucumbers do best in soils that are rich in organic matter. Therefore dig the ground in the autumn to a spade's depth and leave it rough. Seven days before the cucumbers started under glass are to be planted out, which should be at the end of May when the feat of frosts has passed, prepare a trench 9 in. deeper

than the depth of a spade. Place a layer of well-rotted compost or old farmyard manure in this trench and tread it down until it is * in. thick. Put back all the soil so that a ridge is formed. It is into this ridge that the plants are set.

Alternatively, if a long row is not required, individual holes may be prepared, if a spart, to a spade's depth and a spade's width. At the bottom of each hole, place a layer of well-rotted compost in thick. Replace the soil to form small mounds.



FLANTING

Harden off plants that were started in the greenhouse, before planting them out (see The Use of Glass in the Garden).

Knock the plants carefully out of their pots so as not to disturb the ball of soil. Remove the crocks at the base of the ball if any are present. Use a trowel to prepare a hole of exactly the same size as the ball, but be sure to plant so that the top of the ball of soil is \ in. above soil

ing round the stem of the plant, one of the main causes of dry rot disease. Where ridge cucumbers are planted in a row make the holes 2 ft. apart. If the weather

Seeds may be sown late in May into the ridge of soil where the plants are to grow, At 3-ft, intervals push three seeds into the soil 4 in. deep and then cover the three seeds with an upturned glass jam jar to add warmth and to give protection. Keep the jar in position until the plants are well established. Thin down to one plant per station should all three grow.

GENERAL CARE

Pinch back the top 4 in. of each plant after seven leaves have formed, to encourage the production of side growths. Male flowers need not be removed.

Cucumbers are surface-feeding plants and the soil round them should not be hoed. Apply 1 in. of fine sedge peat for

1½ ft. round each plant, or use very fine compost. Always keep the plants well watered but never let water collect round the stems. Always water with a fine spray so that the soil will not be washed away and the roots exposed.

From the moment the first fruits are 3 in. long, feed the plants once a week with one of the bottled liquid manures such as Bio Humus or Liquinure.

HARVESTING

Cut the cucumbers as soon as they are ready to use. Cucumbers store well, so cut regularly as this will encourage regular cropping. Never leave old fruits on the plants to go to seed.

RECOMMENDED VALUETIES

Bedfordshire Prize, hardy. Very prolific. Deep green fruits.

Boston Pickling, short, bright green, smooth fruits. Excellent as a pickle.

Country Giant, produces longer roots than the normal ridge types.

King of the Ridge, a normal heavycropping ridge type. Hardy, vigorous and practically spineless.

EGG PLANTS or AUBERGINES

A member of the potato and tomato family the egg plant originated in the West Indies, The egg-shaped fruits, which may be white or purple, are popular in France, where the name aubergine originated. The purple varieties have a better flavour than the white kinds. Egg plants grow best in loamy soil which is not only rich in organic matter, but is also warm. It is therefore an advantage to grow them under square glass ganwicks or cloches for a little while after planting out.

SOIL PREFARATION

About the middle of April dig wellrotted dung or compost into the ground
at the rate of one large barrowful to 8 sq.
yds. See that it is buried about 9 in. deep.
Fork into the top-soil (about 4 in. deep)
fine compost or sedge peat at half a
bucketful to the sq. yd., and, at the same
time, add a fish manure or a meat and
bone meal at 4 oz, to the sq. yd. Then
allow the soil to settle.

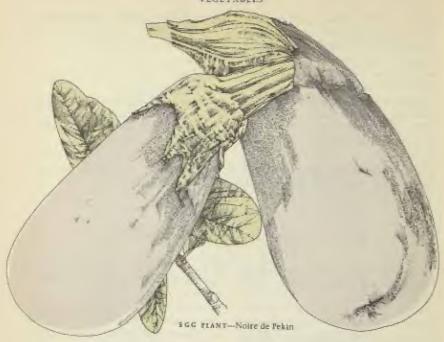
SOWING

Start the plants by sowing the seed about the middle of February in the greenhouse, at a temperature of 60° F. (16° C.). Sow three seeds 1 in. deep in the centre

of a 3-in, pot firmly filled with Eclipse No-Soil or John Innes seed compost, and thin down to one plant per pot a fortnight later. Grow the plants on in the pots on shelves as near as possible to the top glass of the greenhouse to prevent them from being dwarfed. About the third week of May transfer them to a cold frame, with a protecting glass light overhead, and then gradually open up the light as the days get warmer and longer. About the middle of lune, remove the frame light altogether, and a week later put the egg plants out in the warm spot in the vegetable garden where they are to grow.

FLANTING OUT

Carefully knock out the plants from their pots, so that the root balls remain intact. With a trowel, make holes big enough to take the balls of soil without disturbing the roots. Plant firmly in rows 1\frac{1}{2} ft. apart, with 1\frac{1}{2} in, between the rows, pinching out the top inch of each plant to encourage branching. If more than six fruits form on one plant thin them down to this number, always leaving the best on the plant.



GENERAL CARE

As egg plants are often attacked by red spider, which cluster on the underside of the leaves and suck the sap, thus causing the foliage to turn brown, spray the underside of the leaves with water every day and put on the surface of the ground a 1-in. layer of damp sedge peat for 6 in. round each plant. In bad cases syringe with liquid derris.

HARVESTING

Pick off the fruits when they are the size

of a large hen's egg or, in the case of the longer varieties, when they are about in long and 24 in across.

RECOMMENDED VARIETIES

Blanche Longue Chine, produces a long white fruit.

Blue King, bears rich, tender round fruits,

Melanzana, produces round redviolet fruits,

Noire de Pekin, produces long, dark violet fruits.

ENDIVES

Endives make excellent salad for the winter. The plants should be blanched to lessen their bitter taste.

SOIL PREPARATION

1022

Because endives grow largely in the autumn they can follow an early crop,

preferably one like potatoes, for which the ground was well manured. Apply a fish manure at 3 oz. to the sq. yd. or a complete fertilizer at the same rate and then rake the surface level. Tread down the ground at the same time, and unless the soil is already chalky apply a light dressing such as carbonate of lime evenly at 4 oz, to the sq. yd.

SOWING

Endives grow best in a position where there is plenty of sun in the late autumn or early winter, Make the drills \(\frac{1}{2} \) in, deep and \(\frac{1}{2} \) it, apart and sow the seed in June very thinly in these rows, Later thin out the seedlings to at least 10 in, apart.

It is also possible to sow the seed in late July in narrow seed beds which have been enriched with fine sedge peat lightly raked in at the rate of half a bucketful to the sq. yd. Make the drills 6 in. apart only and sow the seed thinly. When the seed-lings are about 1 in. high transfer them to the bed where they are to grow, in rows 1 ft. apart, with 10-in. intervals in the rows. This second method takes longer, but it does allow the gardener to plant out endives after the second-early potatoes have been harvested,

GENERAL CARE

Endives should never be allowed to suffer from lack of water, so in a dry August or early September use a square-area rainer to give the ground a good soaking for an hour at least once a week. Hoe very lightly with a Dutch hoe between the rows to keep down weeds.

To make certain that the plants are not bitter, blanching must be done three weeks before the endives are to be cut, that is about three months after sowing. The simplest way of blanching is to use a number of 8-or 9-in. flower pots, block up the drainage holes with corks and put a pot over each plant. Once the green colouring matter has been driven out of the leaves, cut endives will not keep; so do the blanching in succession, a few plants at a time. Make sure that the plants are dry at the time they are covered up or they may rot. Because lettuces are scarce in November start blanching about the third week in October.

HARVESTING

Cut the blanched endives as close to the ground as possible leaving the roots in the soil.

RECOMMENDED VARIETIES

There are two main types of endive, the curled, sometimes called the Staghorn, and the Batavian, sometimes called the lettuce-leaved. In each group there are white and green varieties.

Batavian Green, compact, hardy, hearting variety with broad, thick, tender leaves.

Batavian White, more delicate in flavour and slightly less hardy than Batavian Green, but crisp and tender.

Green Curled, a larger variety with beautifully cut and curled leaves, and broad mid-ribs.

Moss Curled Green, a compact and very curled variety. Rather tender and often requires protecting by cloches or ganwicks.

Moss Curled White, finely curled with pale leaves. An epicure's variety.

KALE or BORECOLE

Kale or borecole is a most useful winter vegetable and belongs to the cabbage family. It is very hardy and the plants will live through the severest winters, producing plenty of green tops for use in January, February, March and early April. Kale will grow in the poorest of soils and the plants are hardly ever attacked by the dreaded club root disease which attacks brassicas generally. But good drainage is necessary, as the roots have to maintain the plants throughout the winter.

SOIL PREFARATION

Very little soil preparation is necessary. Kale can usually be planted out after early potatoes or early peas without any particular manuring. If the soil is extremely poor, however, rake in fish manure as a complete fertilizer at 2 oz. to the sq. yd. before planting.

SOWING

Sow seed early in May in the south of England and early in April in the north. As with the other members of the cabbage family, sow the seed thinly in a seed bed, in drills 9 in apart and 1 in, deep. Thin out the plants to 1 in apart when they are 1 in, high. In case there may be gaps to fill later on, transplant some of the thinnings into a temporary seed bed 6 in, square in a sunny position.

A variety that does not require a special seed bed is Hungry Gap, which does best if the seed is sown where the plants are to grow. Sow during the first half of June, in drills 1 in. deep and 2½ ft. apart. Sow three seeds every 2 ft. along the drill. When the seedlings are 2 in. high, thin them to one per station. Another variety, Asparagus Kale, can be sown in the south as late as the end of June; plant it out a month later.

Normally, kale is planted out during June or early in July, as the earlier vegetable crops are harvested and the land becomes vacant. With the dibber, make holes 1½ ft. apart in rows 2½ ft. apart. If the soil is dry, pour a large cupful of water into each hole at planting time. Firm the plants in with the heel.

GENERAL CARE

In districts where the cabbage root maggot causes trouble, use aldrin as a seeddressing or sprinkle a little calomel dust round the plants at planting time. In dry weather use overhead irrigation for an hour or so on the tenth and twentieth days after planting.

HARVESTING

Kale should be left to grow unrestricted until the middle of January. Then cut out the central part of each plant, to encourage the development of sidegrowths. It can be kept growing in this way till well into April.

RECOMMENDED VARIETIES

Asparagus Kale, a hardy, late dwarf type which produces a profusion of tender shoots in the spring. These shoots arise in the axils of the frilly leaves and are very tasty.

Cottager's, grows 21 fr. high. The leaves are crimped and curled along their edges and after a hard winter are often purplish in colour. Tender shoots or sprouts are produced in March or April.

Green Curled, has intensely curled leaves; the plants are of medium height and compact. One of the typical Scotch kales which withstands frosts well.

Green Curled Dwarf, is the best variety for small gardens, because it grows only about 1½ ft. high and produces masses of curly leaves of excellent quality.

Hungry Gap, one of the tallest kinds. A good variety for colder areas, it will survive the hardest winter and is often not used until May or June. The leaves are dark green and much curled.

Ormskirk Heading, an exceptionally hardy variety, popular in Lancashire and Cheshire. Dwarf and robust. A rather loose type of heart is produced, and the leaves have a thick mid-rib.

Ragged Jack, has dark green, deeplycut leaves with crowded foliage especially at the tops of the plants. A northern variety, much grown in Northumberland and Westmorland and in parts of Scotland.

KOHL RABI

Kohl rabi is regarded as a root crop but most of its root is really a swollen stem and grows above ground. It is popular in the East and in Germany. Sometimes called turnip cabbage or knol-kohl, it is a rapid grower and so makes a good catch crop. It should never be grown slowly or the roots will become tough and stringy, and it should never be grown too large for then it will be coarse and disagreeable. At its best kohl rabi tastes like turnip with a nutty flavour.

SOIL PREPARATION

Kohl rabi is an excellent vegetable for a light sandy soil, provided that it is given well-rotted compost at the rate of a bucketful to the sq. yd. and fish manure with a 6 per cent potash content at 3 oz. to the sq. yd.

It will also grow quite well on heavy soils, if, in addition to compost, sedge peat is forked into the top 2 or 3 in. of soil at the rate of half a bucketful to the sq. yd. In both cases give lime as a top dressing at 7 oz. to the sq. yd., except in the case of chalky soils.

SOWING

Make the first sowing in mid-March in

the south and in early April in the north. Successional sowings can be made every three weeks and, for the winter, a sowing can be made as late as the third week of August in the north and early in September in the south.

Sow thinly in drills 15 in. apart, 4 in. deep, and thin out the plants to 6 in. apart when the seedlings are 1 in. high. Make a second thinning, to 1 ft. apart, when the plants are half grown.

GENERAL CARE

Because kohl rabi is a member of the cabbage family it is necessary to take precautions against club root disease (described in Plant Diseases). Turnip flea beetles may also be a nuisance, attacking the plants and pitting the leaves; deal with them by dusting liberally with fresh derris, D.D.T. or lindane.

When hoeing between the rows, take care not to injure the leaves. Hoe lightly, drawing the soil away from the roots rather than up to them.

HARVESTING

The roots should be pulled when they are about the size of tennis balls. They should pull easily.

LEEKS

Leeks are one of the easiest vegetables to grow. When they are harvested in the winter, cut off their long fibrous roots and leave them to rot down; they will quickly produce fine organic matter for any crop that is to follow.

SOIL PREPARATION

Leeks do well on almost any soil, but a deep medium loam that has been well worked is best. The ground should be well drained because the plant has to grow in the winter and will not tolerate stagnant soil conditions. Acid soil should be treated with carbonate of lime as a surface dressing, before planting out at 6 to 7 oz. to the sq. yd.

When preparing the ground, dig in well-rotted compost at the rate of one large barrow-load to 8 sq. yds., and bury



LIEE-Musselburgh

it at about a spade's depth. A fortnight before planting out add a fish manure at 3 oz. to the sq. yd. Leeks repay generous treatment.

SOWING

Sow the seed in a narrow strip of land prepared as a seed bed. Lightly fork in sedge peat or fine compost at the rate of one bucketful to the sq. yd., and then tread the ground before raking level. Make shallow drills \(\frac{1}{2} \) in. deep and \(\frac{1}{2} \) in. apart, and sow the seed thinly. It is quite a good idea to whiten the black seed with a little lime before sowing; this makes it easier to see the seed and to ensure that it is sown thinly. If seed is sown about the third week in March, plants will be ready to put out about the third week in June and even as late as early July.

SOWING IN BOXES

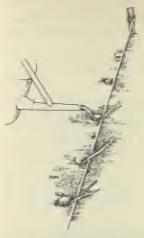
For very early leeks sow the seed in boxes of John Innes seed compost at the end of January. Press down the compost with a wooden presser so that it is firm and level and within † in. of the top of the box. Space out the whitened seed in 1-in. squares and sift a little more of the compost over the top through a †-in. mesh sieve. Use the wooden presser again lightly.

When the plants are 1 in, high, prick them out 2 in, apart into other seed boxes of John Innes potting compost No. 1. After watering, place them on a shelf of the greenhouse as near the glass as possible. The temperature when sowing and pricking out should be 35° F. (13° C.). At the end of March start the hardening-off process by putting the boxes into a frame; from there, plant out in the third week of April or early in May.

PLANTING

Leeks may be planted in trenches or on level ground.

For show leeks or for extra large specimens, trench planting is better.



PLANTING LEEKS
Make holes 6 in deep and 6 in apart,
drop one plant into each hole and fill
the holes with water. The watering will
wash down enough soil to cover the roots



TYING LEEKS FOR BLANCHING A few weeks after planting, the a paper collar round each plant to exclude light from the lower part of the stem and so blanch the leeks while they are growing

Take out a trench I ft. deep and I ft. wide and bury in it well-rotted compost or dung at the rate of one bucketful to the yard run, forking in to a depth of 4 in. Tread well and then put back 3 in. of the soil, leaving the rest on either side of the trench. Put the plants out I ft. apart down the middle of the trench, burying the roots about I in. deep. If more than one trench is required, they should be 1½ ft. apart.

Normally, leeks are planted on level ground in June and early July. With a dibber make holes in the prepared soil. 6 in. deep and 6 in. apart for leeks needed before Christmas; 6 in. deep and 9 in. apart for a later crop. Water the seed bed well the day before getting up the plants.

To transplant, fork up the plants carefully, and cut back the tops by a quarter and the roots by about half. Drop one plant in the bottom of each hole and fill the hole with water. Do not firm the plant in, and do not put any soil in the

hole. The watering will wash down enough soil to cover the roots.

GENERAL CARE

Hoe lightly between the rows with a Dutch hoe during the summer and early autumn. Cut off with a knife or sharp secateurs any flower stems that appear. Three weeks after planting apply a fish manure at the rate of 2 oz, to the yard run or, better still, dried poultry manure at 1 oz, to the yard run. Alternatively, top dress with 2 oz, superphosphate and 1 oz, sulphate of potash at the rate of 2 oz, to the sq. yd, In a dry year leeks need water; use a square-area rainer on them for three-quarters of an hour once a week.

Where leeks are grown in trenches it is necessary to earth them up gradually. Put about 1 in, of soil into the trench a month after planting, another inch of soil a month after that and so on. Gradually draw the soil up the plants from a ridge on either side to earth up the stems, but do not bury the leaves themselves. Corrugated cardboard tied round the stems before earthing up will prevent the leaves from being gritty when taken into the kitchen.

HARVESTING

The earliest leeks can be dug up for use at the beginning of October. Loosen the soil round each plant with a fork before pulling it out. When harvesting leeks grown in trenches, put the soil back so that the remaining leeks stay in the dark, RECOMMENDED VARIETIES

Acquisition, an extra-long-stemmed variety. Leaves golden-green, much used for shows.

Lyon, large, solid, thick stems; wide, strong, dark green leaves. Useful variety for exhibiting.

Musselburgh, long, thick, ivory stems of excellent flavour. Very hardy.

Northumbrian, very broad leaves; stout white stems of medium length. Mild flavour,

LETTUCES

If the right varieties of lettuce are chosen for sowing at the right time, it is possible to harvest lettuces out-of-doors from May until late October and, after that, from ganwicks, continuous cloches or Dutch lights. To produce crisp, succulent lettuces, the soil should be rich in manure. The best results are obtained by sowing where the plants are to grow rather than by transplanting—and this is especially true of the later sowings.

There are two main types of lettuce, cabbage and cos, but there are many varieties. There are, for instance, tail cos and dwarf cos, and varieties like Little Gem which seem to be a cross between cos and cabbage lettuce. In the cabbage lettuce group are the smooth light green types known as "butterheads" and the crimped, crisp-leaved types known as "icebergs".

Because the care of lettuces differs in summer and winter, the two methods of growing are dealt with separately.

SUMMER CABBAGE LETTUCES

SOIL PREPARATION

Soil for summer lettuces must contain plenty of fine organic matter. Dig in old 1028 dung or well-rotted compost at the rate of two 2-gal. bucketfuls to the sq. yd. when the soil is being prepared in the autumn. A week or so before seed sowing, fork in (no deeper than 2 in.) fine sedge peat at the rate of one bucketful to the sq. yd. This will ensure that the seedlings grow quickly without any check. When a tilth is being prepared, lightly rake in fish manure or meat and bone meal at 4 oz. to the sq. yd. Finally, dust carbonate of lime over the surface of the ground at 5 oz. to the sq. yd., unless the land is chalky.

SOWING

Sow the seed (from the middle of March in the south and from the beginning of April in the north) in drills 1 ft. apart and ½ in. deep. Make sowings every 14 days until the middle of July. This will ensure that a succession of well-hearted lettuces is kept up. In small gardens, sow a quarter of a row or half a row at a time.

EARLY FLANTS

It is possible to sow seed in boxes containing John Innes seed compost in a greenhouse at a temperature of 35° F. (13° C.) in January. When big enough, plant out the seedlings 2 in. square, in frames or under cloches, so that by early March the plants may be set out in rows 9 in. apart. Great care should always be taken when handling lettuce plants because they bruise so easily. Always pull them up by the roots and hold them by the collar.

GENERAL CARE

When the weather is dry, water with a square-area rainer for an hour once a week, to keep the lettuces growing, or water well with the rose on the watering-can. Thin the plants out early to 9 in apart so that there is never any check to growth. Small varieties like Tom Thumb need be thinned to only 6 in apart.

HARVESTING

Cut fully-hearted lettuces first thing in the morning while the dew is still on them. Use a sharp knife and make the cut just below the bottom leaves. Never leave plants in the rows once they have started to bolt or they will go to seed. If too many lettuces are ready together put those not required on the compost heap where they will help to rot down other material.

RECOMMENDED SUMMER CABBAGE

VARIETIES

All the Year Round, very hardy and particularly resistant to dry weather conditions. Medium-sized, solid and tendet.

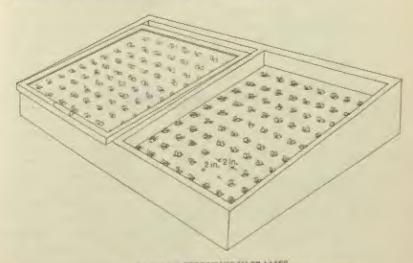
Borough Wonder, may be sown in spring or summer. Solid hearts; pale green colour.

Continuity, very long standing, excellent for dry, light soils. Leaves have a reddish-brown tinge which may be considered unattractive.

Great Lakes, a particularly flavorous kind with crisp, crinkly foliage. Stands well in hot weather. Very large,

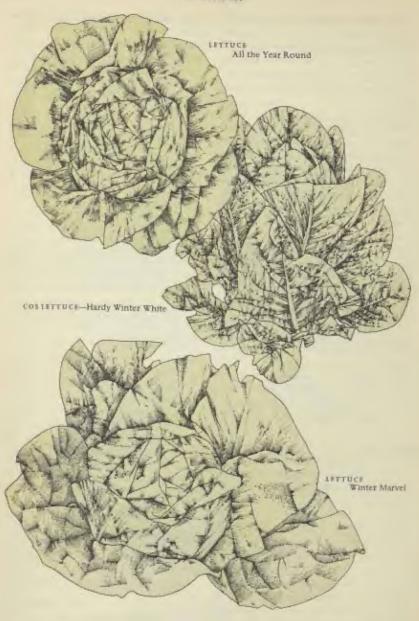
Iceberg, leaves crimped and fringed. Light green but tinged with a reddishbrown. A good summer dry-weather variety.

Salad Bowl, a loose-leaved variety, of medium green colour. Does not produce a heart.



LETTUCE SEEDLINGS IN FRAMES

When the seedlings are large enough to handle, plant them out 2 in. square into frames. Always handle lettuces with great care to prevent brusing



WINTER CABBAGE LETTUCES

Lettuces that have to live through the winter need well-drained soil, and therefore do better on light, sandy, medium loams. Try to give the plot shelter from the north and east winds—if necessary put up strips of sacking 3 ft. high as a temporary hedge. Do not fork in compost or dung but sow the lettuces after a crop, such as second-early potatoes, which has been properly manured.

Normally the only preparation required is to rake the soil over when the previous crop has been harvested and, at the same time, to apply fish manure with a 10 per cent potash content at the rate of 3 oz. to the sq. yd. Meat and bone meal may be used instead at the same rate, in which case, add wood ash at 6 to 7 oz. to the sq. yd. Early in March the following year dried blood may be given at 5 oz. to the sq. yd.; be sure to apply it between the rows and not on the plants.

SOWING

Sow the seeds in rows I ft. apart and not more than \(\frac{1}{2} \) in. deep early in September. Sow thinly but be prepared to thin out the plants to 5 in. apart before the winter sets in.

If the ground where they are to be grown is not ready, sow the seed about the middle of September in a sunny seed bed into which plenty of fine sedge peat has been raked. The rows here should be 9 in. apart and, if the seed is sown thinly enough, the seedlings can be planted out where they are to grow as late as the middle of November in the south and as early as the middle of October in the north.

PLANTING

Lettuce seedlings can often be left in a seed bed until early the following March and still be planted out successfully. Make the rows 1 ft. apart and the plants 9 in. apart in the rows. Firm planting is essential. Hoe \(\frac{1}{2}\) in, deep for the first three weeks after planting and then again as soon as the soil gets weedy—early in March, when dried blood can be applied. These lettuces will be ready in May.

HARVESTING

Cut the lettuces as they are ready in May and June.

RECOMMENDED WINTER CABBAGE VARIETIES

Arctic King, rather small, with solid hearts and few outside leaves. Very early and extremely hardy.

Imperial, large, hardy variety. Fine quality, medium hearts.

Tom Thumb, small compact, dark green hearts. Long standing. May'be grown in the summer also. Good for small gardens.

Winter Crop, very hardy and suitable for the north, Solid hearts.

Winter Marvel, clear green, slightly wavy leaves. Hardy. Good in the east.

COS LETTUCES

Cos lettuces are cultivated just as cabbage lettuces. Cos lettuces withstand droughts better than cabbage varieties. Some varieties, known as self-folding, heart moderately easily. With other varieties, it helps the lettuces to heart properly if a thick rubber band is put round each plant half-way down, a fortnight before it is to be cut. There are, of course, summer and winter varieties of cos lettuce.

RECOMMENDED VARIETIES

Summer Cos Lectures

Balloon, a very large, pale green and rather solid variety.

Harris White Select, a large, self-folding kind with solid, crisp, white hearts. Very popular.

Lobjoit's Green, has large dark green hearts, closely self-folded. Often lasts throughout the season.

Little Gem, a well-flavoured baby cos

with dwarf compact heads of medium colour. It has some cabbage lettuce characteristics.

Winter Cos Lettuces

Bath, has self-folding hearts, with dull browny-green outer foliage. Hardy Winter White, a very hardy, compact variety with large, crisp hearts. Long standing.

Winter Density, compact, very solid hearts, Intermediate between cos and cabbage kinds.

MARROWS

There are many different types and varieties of marrow: some dwarf, others almost climbers. Some marrows are largely used in summer and others are stored for use in winter.

SOIL PREPARATION

Marrows prefer heavier soils, but they can be grown on most types of properly prepared ground. They do best in positions sheltered from cold winds when they are first put out in late May and early June. Marrows always need an abundance of water.

When preparing the ground, add wellrotted manure or compost where the
plants are to grow at the rate of 2 bucketfuls to the yard run. It is useful to take
out a drill about a spade's width and 9 in.
deep and fill this with the manure or compost and firm down by treading. Put this
soil back on top to form a ridge; the marrow plants can then be put out on this
ridge, 6 ft. apart in the case of the trailing
kinds and 4 ft. apart for the bush varieties.

The alternative is to dig holes 15 in. deep and 1½ ft. wide where the marrows are to grow, and to put into the bottom of each a layer of dung or rotted compost, 6 or 7 in. deep when trodden down. When the soil is put back to form mounds over the compost, add 3 or 4 oz, of fish manure.

SOWING

It is best to sow three-year-old seed; the plants that result produce a greater proportion of female blooms than plants 1032 from other seed. Sow the seeds where the plants are to grow about the middle of April, and cover them with upturned glass jam jars or a cloche.

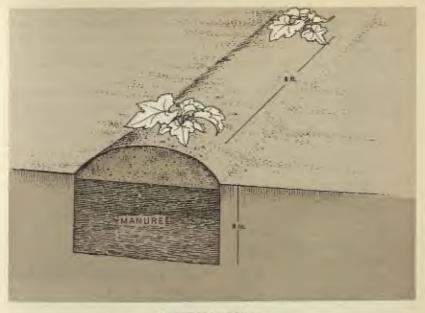
Alternatively, sow the seed in John Innes seed compost or Eclipse No-Soil compost in 3-in. pots in the greenhouse at a temperature of about 50° F. (10° C.). Harden off the plants by putting them into frames about the end of April. Plant them out where they are to grow about the third week in May. In the north, delay planting out until early June.

PLANTING

If the plants were started in pots, water them two days before planting out. Make holes with a trowel at the centres of the mounds and plant firmly. Do not grip the plants by the stems or they may be bruised and irreparably damaged. It is as well to protect the plants during the first week they are in the ground by covering them, during the day-time only, with inverted 6-in. pots.

GENERAL CARE

The tips of the main shoots on the trailing varieties should be pinched back by an inch when they are 1½ ft. long, for this encourages the formation of side growths (laterals) on which the bulk of the female flowers will be borne. It is a good idea to mulch the ground with well-rotted compost or damp sedge peat for 2 or 3 ft. round each plant. Lawn mowings to a depth of ½ in. round each plant help to



PLANTING MARROWS

Draw a drill 9 in. deep, fill it with manure and firm down by treading. Make a ridge of soil on top of the manure and place the plants on this ridge

prevent the surface-feeding roots from drying out, which is vital. In dry weather, water for an hour once a week with an overhead rainer, or soak the surrounding soil with a watering-can.

This regular watering is important, but if too much leafy trailing growth results, clip back the shoots to allow more air to circulate round the flowers and developing fruits. If the plants are not growing in soil which is rich in compost, liquid manure can be given at the rate of a gallon canful at fortnightly intervals. There is little to be gained in encouraging too much growth.

Sometimes, especially early in the season, it is necessary to encourage pollination in order to get fruit to set. This can be done either by transferring pollen from the male to the female

flowers with a camel-hair brush or by picking off the male (non-fruiting) flowers and putting them on to the female (fruiting) ones so that the pollen is rubbed on to the stigma of the female flower. Female flowers can be identified easily by the swelling below or at the back of the bloom.

HARVESTING

It is usually possible to start cutting marrows in July; keep cutting them when they are young and the plants will continue cropping until well on in September. If some large marrows are to be stored for the winter, leave the late fruits in position and cut them late in October.

RECOMMENDED VARIETIES

Courgette, should be cut when they are not more than 6 in, long.

Roller, produces long white fruits without any ribbing. A heavy cropper, excellent for the north.

Trailing Types

Long Green Trailing, has cylindricalshaped fruits, larger at the blossom end than the stem end. Dark green with lighter stripes.

Moore's Cream, smooth, creamyskinned oval fruits of excellent texture. Bush Types

Custard White, produces a creamywhite fruit with a scalloped edge at its concave base.

Green Bush, has dark green fruits with pale green stripes.

Tender and True, a prolific variety producing a flat type of marrow with no scallops. The skin is mottled green. Good flavour when cut young.

MUSTARD AND CRESS

Though these salads are usually referred to as mustard and cress, it is more usual nowadays to grow rape and cress, because rape has more flavour.

SOIL PREPARATION

To avoid grittiness, grow these salads on damp sacking which can be laid on boxes in greenhouses or on the soil outside. Alternatively, sow on damp fine sedge peat. Where soil is used, water the bed with boiling water before sowing to kill the fungus spores of damping-off disease. This fungus trouble does not occur when sacking is used.

50WING

Sow the mustard or rape seeds three days after the cress, so that the two crops will mature at the same time. They will take from 10 to 14 days to mature. For even and speedy germination, keep the freshly sown seed in the dark by covering with further damp sacking or with upturned boxes until the seed has germinated. Make winter sowings in a greenhouse, spring sowings in a frame and summer sowings in the open. To sow 2 sq. yds, in the open, 1 lb. of mustard or rape seed is needed, or } lb. of cress seed.

HARVESTING

Cut the mustard and cress as they are needed, while they are still young and tender. If the salads are grown on soil, cut carefully with a pair of scissors and then wash well.

ONIONS

Onions are thought to be a difficult crop to grow in Britain because the maggots of the onion fly attack the plants when they are only a quarter grown. However, the introduction of gamma dust has largely solved this problem.

There are three main groups of onions: salad or spring onions which are sown in the autumn or spring; the autumnsown varieties for early bulbs, and the early sown kinds for late-keeping and exhibition.

SOM PREPARATION

Choose an open site so that the onions get plenty of sunlight. Good onions can be produced on varying types of soil but they do best on light, deep loam which has been well manured. If the land is dug over in the autumn, even as early as mid-September, the soil has a chance to settle down; onions like a firm seed bed and the lighter soils can even be roiled before or after seed sowing. During the autumn digging, add well-rotted dung or compost at the rate of 14 bucketfuls to the sq. yd. and, 14 days before sowing or planting out, apply a fish manure with a 10 per cent potash content at 4 oz. to the sq. yd. In the case of autumn-sown varieties lightly hoe in old soot at one handful per sq. yd. in February or give a dressing of 4 oz. of bone meal and 2 oz. of sulphate of potash at the same rate. In the north it may not be possible to hoe in the soot until March.

For autumn sowings, do not use dung or compost, but sow the seed on land which has recently grown a well-manured crop. Apply a fish fertilizer at 3 oz. to the sq. yd. If the ground has a low lime content add carbonate of lime as a top dressing at 5 oz. to the sq. yd.

SPRING SOWING

The seeds should be sown in March or as soon as the soil can be raked down to a fine tilth. Take out \$\frac{1}{2}\$-in.-deep drills 1 ft. apart and use \$\frac{1}{4}\$ oz, of seed for each 50-ft. row. The seed is easier to sow thinly if it is whitened with lime. Parsley helps to keep away the onion fly, so it is a good idea to sow a row of this herb between every three rows of onions.

JANUARY SOWING FOR EXHIBITION

To grow large onlons for show purposes, sow the seed in boxes containing John Innes seed compost early in January. Firm the compost level within ½ in. of the top of the boxes, whiten the seeds with lime and sow them, t in. square, on the surface of the soil. Press each seed into the soil with the point of a pencil and water through the fine rose of a can. Then place the boxes on the staging of the greenhouse with a temperature of



65° F. (18° C.). Cover each box with a sheet of glass with a sheet of brown paper over the top; wipe the underside of the glass each day until the seedlings appear, when the glass and the paper may be taken off altogether.

At this time place the boxes on shelving near the greenhouse glass and three weeks later move them into a frame and harden off for about a fortnight. Plant



PLANTING ONIONS
Make holes with a small dibber and plant
out the seedlings along a line; firm well
to discourage onion fly

out the seedlings about the middle of April, 6 in. apart in rows 1 ft. apart.

To raise 3- or 4-lb. onions, grow each seedling in a 3-in. pot filled with John Innes potting compost No. 1. After the usual hardening off in the frame, knock the plants out of their pots and plant them, with balls of soil intact, 9 in. apart in rows 15 in. apart. Provide each plant with a bamboo stake so that the tops can be tied up. Water the plants in well.

ONION SETS

Onion sets are small bulbs which are planted in the spring as an alternative to growing from seed. Since they have a shorter growing season, it is often easier to grow and harvest from sets, especially in the north or wetter parts of the country. The plants are also less liable to attack by onion fly.

Sets can be bought or raised from seed. Sow seed thickly in May in fairly poor ground. Do not thin, water occasionally but do not feed. In this way a crop of small bulbs will be produced, not more than ½ to ¼ in. in diameter. Lift in September, store in a cool, dry place until planting time the following spring.

Plant out the single bulbs at the end of March in V-shaped drills 1 in. deep and 1 fr. apart. Push one bulb into the soil every 6 in. and hoe lightly to cover. If the bulbs tend to come up out of the soil within a week or so of planting, push them in firmly.

AUTUMN SOWING

Sow the seed in September in rows 9 in. apart. The thinnings pulled early in the following year are used as spring onions. The best varieties of onion for such spring use are White Lisbon and White Portugal, though other hardy varieties can be used for autumn sowing and harvested before the main-crop varieties in the late summer.

GENERAL CARE

As main-crop bulbing onions will not survive mid-summer drought, supply artificial rain for about an hour every ten days if necessary. Do not give water when the bulbs start ripening in the late summer or early autumn.

Hoe the soil between the rows regularly and weed by hand in the rows. If the seed was sown very thinly and large bulbs are not required, there is no need for thinning, and therefore less likelihood of attack from onion fly. Where thinning is necessary, it should be done to within 4 in. apart.

ONION FLY

The best treatment is to dust the roots at thinning time (when the seedlings are in the "loop" or "crook" stage) with aldrin, a 4 per cent calomel powder or one of the up-to-date gamma B.H.C. dusts sold for the purpose. Follow this by a second application a fortnight later.



USING

Bulbing onions are ready for use in late August and September or early October. The autumn-sown kinds are harvested first. Bend over the necks of the plants by hand or with the back of the rake when the tops are starting to turn yellow. After this the leaves will gradually dry off; when the skin of the bulbs turns yellow, plunge in a fork on either side of the row to loosen the soil. Carefully pull up the onions and lay them out in the sun so that they can dry off. Turn them over 14 days later so that they will ripen evenly; two weeks later they should be ready to put into store.

If the weather is bad, complete the ripening-off on shelves in the green-house or potting shed. Onions may be stored in boxes. So that the air will circulate round them, rest them on wire netting put into the bottom of the boxes. These boxes may be piled one on another in an airy, dry shed.

RECOMMENDED VARIETIES

Autumn Sowing

Autumn Triumph, globe-shaped, flattened, large bulbs. Excellent keeper.

Giant Zittau, medium-sized, semi-flat bulbs, brown skinned. Keeps well.

Red Tripoli, has red outer skin and is sometimes sold as Red Italian. The bulbs are flattish and long.

Reliance, semi-globular bulbs. Excellent keeper and heavy cropper.

Spring Sewing

A.I., semi-globular bulbs, mild in flavour. Good keeper.

Bedfordshire Champion, globe-shaped bulbs of good size. Light brown skin, firm and excellent flavour.

James's Keeping, medium size, firm flesh, reddish-brown skin shading to salmon-pink.

Up To Date, heavy cropper and good keeper. Uniform globular bulbs of good quality and weight.

For Exhibition

Crossling's Selected, the largest onion grown. Seed comes from Scotland.

Premier, a flattish, large bulb of pale straw colour. Very large and heavy, Buy a good strain.

Selected Allsa Craig, pear-shaped large bulbs; dull, pale colour. As for Premier, strain is very important,



PREPARING ONIONS FOR HARVESTING

Bend over the necks of the plants when the tops begin to turn yellow, so that the leaver will gradually dry off

PICKLING ONIONS

Pickling onions can be sown in poor soil. In April rake the soil level, sow the seed broadcast and rake again. Allow the bulbs to grow naturally, carrying out any hand weeding that may be necessary. Do not thin. When the tops start to turn yellow fork up the baby bulbs and leave them on the ground to ripen.

The two best varieties are Barletta, which produces early small white bulbs, and Paris Silver Skin, which produces early flat white bulbs,

PARSNIPS

The great disadvantage of parsnips is that they occupy the ground for almost twelve months.

SOIL PREPARATION

Parsnips will grow equally well in heavy clay or light loam. Use a plot that has been well manured for a previous crop. Never manure the ground especially for parsnips, or the roots will fork instead of growing straight and clean. Before sowing apply a complete organic fertilizer, such as a fish manure with a 10 per cent potash content, at the rate of 3 oz. to the sq. yd. Alternatively, apply a mixture of 2 parts bone meal and 1 part sulphate of potash at the rate of 3 oz. to each sq. yd.

SOWING

The parsnip is the first vegetable to be sown each year—the end of February in the south and the end of March in the north. The seed may be sown in April, but the roots will not then grow so large.

Make drills I in. deep and 15 in. apart and, because parsnip seed germinates badly, sow the seed thickly. If radish seed, which germinates quickly, is sown with the parsnip, it will mark out the rows and make it possible to hoe earlier.

GENERAL CARE

When the plants are 2 in, high, thin them out to 6 in, apart. Seedlings may be transplanted to fill in gaps if plenty of water is given afterwards.

HARVESTING

Parsnips taste best when they have been touched by frost and they may therefore be left in the ground until late in the winter. If the ground is needed for winter preparation, dig up the parsnip roots and, in the south, leave them on the ground in a heap, where the frost can touch and sweeten them and the rain can wash them.



In the north, where frosts are harder and more prolonged, bring the roots indoors or into a dry shed and cover them with an old sack.

RECOMMENDED VARIETIES

Improved Hollow Crown, heavy cropper with long, smooth, well-shaped roots. Good quality. Lisbonnais, handsome, tapering roots, fine skin and superior flesh. The epicure's variety,

Offenham, a heavy-shouldered, intermediate type. Best kind for shallow soils.

The Student, a heavy-cropping, medium-sized variety which has thick, tapering roots.

PEAS

The green pea is now available in so many varieties that types can be chosen suitable for sowing at any time from February to November. Some varieties pod early and some late; a careful choice of seeds will maintain adequate supplies over several months. Choose early varieties for sowing in February and March, main-crop varieties for sowing in April and May, late varieties for sowing in lune or even later, and winter-growing. varieties for sowing in October and November. In milder districts the first early varieties can be picked in June, and the last of the late varieties in the second half of October, provided the frosts are not too sharp. The winter-growing varieties can be picked in early May of the following year.

There are two main groups of peas: the round-seeded kinds which are the hardier, and the wrinkled-seeded marrowfats which are the sweeter.

SOIL PREPARATION

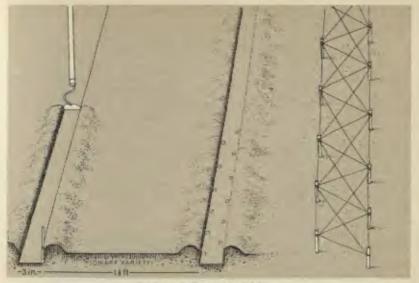
At least four weeks before sowing, dig compost or well-rotted manure into the soil to a depth of 9 in. and at the rate of one bucketful to the yard along the length of the proposed row.

A week or two before sowing, rake in a top dressing of fish manure or meat and bone meal at the rate of 4 oz. to the sq. yd.; alternatively, rake in a mixture of 2 oz. superphosphate of lime and 1 oz. sulphate of potash to the sq. yd. sowing

For early sowings choose a well-drained area, where the ground has been well prepared to provide aeration. Seeds sown in soil that is still wet and cold are sometimes attacked by a minute fungus which causes pre-emergence damping-off, so that germination appears to be poor. To guard against losses caused in this way, sprinkle organo-mercuric dust sparingly into the bag of peas, and shake the bag for a minute before sowing. This dressing will also prevent mice eating the seeds. Both these precautions are unnecessary for main-crop or late sowings.

Make 3-in. flat-bottomed drills with either a rake or hoe. The distance between the drills must vary with the fully grown height of the varieties to be sown. For 4-ft.-high varieties, leave 4 ft. between the drills; for dwarf 1½-ft. varieties, leave 1½ ft. between the drills, and so on. Scatter the winter-growing varieties along the drills, but set the main-crop and other varieties singly 2 to 3 in. apart, and staggered. To level up the surface, draw the soil over the drills with a rake, or, in very light soil, push it back over the drills with the feet.

To protect the seeds and seedlings from birds, place small twigs over the sowings, or black cotton stranded from sticks close to the ground. Alternatively, use



SOWING AND PROTECTING PEAS

Make 3-in., flat-bottomed drills with either a rake or hoe, and stagger the seeds along the
drills 2 to 3 in. apart. To protect peas from birds, place small sticks at the side of the rows
and twist black cotton among the sticks

bird-scarers, or pea protectors (wire frames made specially for the purpose and usable year after year).

GENERAL CARE

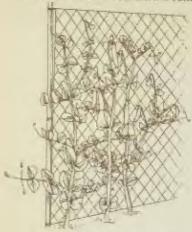
Once the seedlings are 3 in. high, push in small twiggy pea sticks along the rows to encourage the seedlings to climb. Later, push in close to the rows of peas, and along each side of them, tailer pea sticks (about a foot longer than the ultimate height of the variety being grown) so that they slope outward from the row at an angle of 45°. This forms a "V" which provides the peas with more light and air to encourage ripening and to simplify picking. Alternatively, erect posts at each end of the rows and fix 3-in. square mesh wire netting to them, to run the length of the rows.

A constant supply of moisture must be available if good peas are to be grown, otherwise the pods become dry rather than succulent, and growth is generally stunted. Mulching during the growing season is therefore vital. Use lawnmowings, peat or leaf mould, or even polythene strips if no organic material is available. In dry weather this operation is particularly important, because peas suffering from drought are prone to mildew attack. This appears as a slight powdering of the leaves and pods and spreads rapidly, stunting the pods and preventing a good crop. To produce succulent, quickly grown plants, the plants need watering every week during a dry summer.

HARVESTING

Pick the pods regularly when ready, taking care to remove all the pods before they mature; if one or two ripe pods are left on the plants for seeds, the quantity of the crop will be reduced. It is better to grow a few plants separately for

TWO METHODS OF SUPPORTING PEAS



Erect posts at each end of the row and fix i-in, much wire netting firmly to them for the peas to climb. After harvesting remove the haulms from the netting

seed-saving, Immediately the plants are completely cleared of pods, remove the haulms and put them on the compost heap. If they are left standing and show any signs of mildew, they become a certain source of infection to later varieties.

Leave the roots in the soil, as they will provide it with nitrogenous material.

RECOMMENDED VARIETIES

first earlies for sowing in February and the first half of March, and taking about 11 or 12 weeks to mature.

Feltham First, 11 ft., the earliest variety of all.

Kelvedon Wonder, 11 ft., a heavy cropper,

Meteor, 11 ft., a good early, roundseeded variety.

Second earlies for sowing in March and taking about 12 or 13 weeks to mature.

Duplex, 24 ft., pods hang in pairs.

Early Onward, 2 ft., like Onward but a week or two earlier, Well-filled, bluntended pods.

Onward, 21 ft., a remarkable cropper,



To give the peas more light and air, push in pea sticks along each side of the row sloping outward forming a V. The peas will then grow away from each other

(The foregoing varieties are recommended for deep-freezing.)

Main crop for sowing in April and May and taking about 13 or 14 weeks to mature.

Kelvedon Monarch, 21 fr., a wrinkledseeded, heavy cropper.

Raynes Park, 3 ft., delicious, heavycropping; dark green leaves.

Stratagem, 2 ft., produces large pods.

Edible-podded or Sugar Peas

Dwarf Sugar, 2 ft., excellent flavour.

Giant Sugar, 5 ft., also called Pois Mangetout

(Two good varieties which can be used whole when young. Both are main-crop types and take about 12 weeks to mature.)

Lites for sowing in June or later in favourable seasons, and taking up to 15 weeks to mature.

Alderman, 5 ft., produces very dark green pods.

Gladstone, 4 ft., a good later variety because it withstands drought better than any other variety of pea. Winter-growers

Round-seeded varieties for sowing in October or November in a sheltered spot, such as a sunny border at the foot of a fence; must be protected with straw or bracken during really severe weather. Sow the seed thickly, as winter losses are inevitably heavy.

Feltham First, 11 ft., reliable, Meteor, similar to Feltham First.

ASPARAGUS PEAS

The plants of this vegetable look more like field vetch than garden peas. They grow as 1½-ft. high bushes and produce beautiful bright red-brown blossoms, like baby sweet peas.

SOIL PREPARATION

The asparagus pea will grow on almost any soil but prospers best if well-rotted compost is dug into the ground a spade's depth along the strip where the seeds are to be sown.

After digging, tread the ground well to make it firm, and follow this by raking to a fine and level surface. During this operation apply fish manure with a 6 per cent potash content at 3 oz. to the sq. yd. Unless the soil is chalky, lime the surface afterwards with carbonate of lime at 6 oz. to the sq. yd.

SOWING

Take out drills \(\frac{1}{2} \) in, deep with the corner of the draw hoe drawn against a line stretched tightly over the soil. Drop one seed every \(\frac{1}{2} \) in, along the drill, rake the ground over and firm with the rake head.

GENERAL CARE

Though the peas do not climb, put twiggy sticks I ft. high on either side of the rows to support the plants.

HARVESTING

The pods are square with green, fleshy flanges. Pick them while they are young (when they are less than 1 in, long).

POTATOES

The potato is useful as a cleaning crop; the rows are earthed up and the tops grow large so that weeds are smothered, and the ground is cleaner at the end of the season because of all the work that has been done. To get good yields, manure the crop heavily. This also leaves the ground in a better condition for the crop that follows.

SOIL PREPARATION

Dig the ground in the autumn to a spade's depth and leave it rough. In the spring late in March or early in April—prepare +-in.-deep furrows and place in them old dung or well-rotted compost at the rate of one bucketful per yard run. Then sprinkle evenly along the furrows a fish fertilizer with a 6 per cent potash content at 3 oz. to the yard run. Do not give lime; potatoes dislike it and its presence in the soil seems to encourage scab disease.

PREPARING TUBERS

Plant seed potatoes the size of a hen's egg, weighing about 2\frac{1}{2} oz. The best tubers are obtained from Scotland or Ireland with the appropriate certificate to show that they are free from virus. If the tubers are larger than 2\frac{1}{2} oz. cut them

in two, lengthways, at planting time, but be sure that there is a shoot on each piece.

It pays to "chit" potatoes—to make them shoot sprouts before planting. At the end of January or in February place them with the rose ends—the ends with the majority of eyes—upward in a tray. If the tubers are put tightly together in the tray they will keep one another upright. At each corner of each tray, which should be about 2½ ft. long, 1½ ft. wide and 3 in. deep, nail a 1-in.-square piece of wood to stand at least 3 in, above the box. The trays may then be piled one on the other without injuring the tubers or the sprouts they are going to produce.

Store the trays in a frost-free shed, greenhouse or room where there is plenty of light. If greenfly attack the sprouts that appear (it may happen when they are about § in. long), dust the tubers all over with derris dust. If more than two good shoots develop on each tuber, rub off the extra ones carefully with the thumb.

PLANTING

In the south, plant potatoes about the middle of March; in the colder parts of the north, about the middle of April. Because the main crops need a longer season of growth, plant them first, and the earlier crops last. At planting time the two sprouts on each tuber should be about 2 in. long. To ensure that the shoots are not knocked off the tubers, take the potatoes out of the trays one at a time to put them in the furrows where they are to grow.

Plant earlies 1 ft. apart in rows 12 ft. apart; second earlies 12 ft. apart in rows 22 ft. apart; main-crops or lates 12 ft. apart in rows 23 ft. apart.

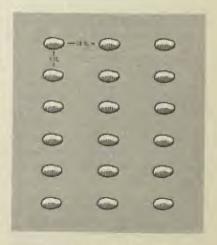
Place the potatoes on the manure in the furrows and cover each one with a small handful of grass mowings, to keep away scab disease. Use the draw hoe to draw soil into the furrows in such a way that a mound is left right the way down each row. When the tops come through these mounds it may be necessary to use the hoe again to cover the leaves until all fear of frost is passed.

GENERAL CARE

At the beginning of June carefully hoe away a little of the soil to expose the leaves. When the plants are 8 in. high, hoe again to earth up the plants, leaving the top 6 in. uncovered. The sides of the ridges should be at an angle of 45°. If they are steeper, tubers may appear through the sides of the ridges; if they are flatter, the plants will not be sufficiently well covered.

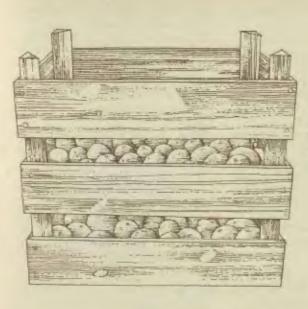
Make a second earthing up a month later and another three weeks after that. On these occasions, draw up only another inch of soil.

Potato blight disease invariably attacks the leaves. It usually starts some time in June in the south and as late as the first week of July in the Midlands and perhaps about the third or fourth week of July in the north. Spray or dust the



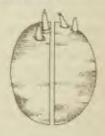
Planting durances for early potatoes

VEGETABLES



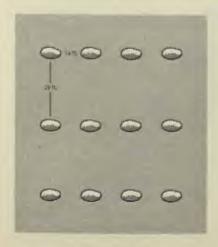


At planting time, if the tubers are larger than 14 oz., halve them lengthways (below), making sure that there is a shoot on each half

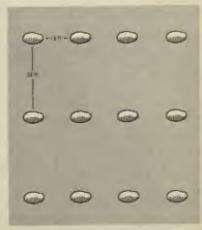


PREPARING TUBERS

To encourage the tubers to sprout before planting, place them in trays, rose ends upward, and stack the trays on top of one another in a light, frost-free shed



Planting distances for second earlies



Flanting distances for main-crop potatoes

plants with a copper mixture as a preventive, covering the leaves thoroughly.

HARVESTING

Use the early potatoes as soon as they are large enough, but do not be tempted to dig them all up when they are small; a crop can double its weight in a fortnight. Do not plunge the fork straight into the ground—it may impale some of the potatoes—but fork on the side, to throw the plants forward. Special flat-tined potato forks are available.

It is worth while cutting off the tops of the main crop with a pair of shears and removing them to the compost heap before attempting to dig up the potatoes. There is then no fear that the spores of any disease on the leaves will drop down on to the potatoes and so cause trouble when they are stored.

STORING

Potatoes can be stored in clamps: dig a shallow trench 4 ft. wide, and pile the potatoes carefully to a height of 3 ft. Cover the mound with a 6-in.-thick layer of straw, and then a 6-in. layer of soil. When digging out the soil for this purpose, make a trench all round the clamp to carry away the excess moisture. It is important to make an air-shaft into the mound; tightly twist a 4-in, thick ruft of straw and pass it through the covering soil. A long clamp needs such twists of straw at 6-ft, intervals.

RECOMMENDED VARIETIES

Earlies

Arran Pilot, a white kidney-shaped potato which can be dug early or left in the ground to become a second early.

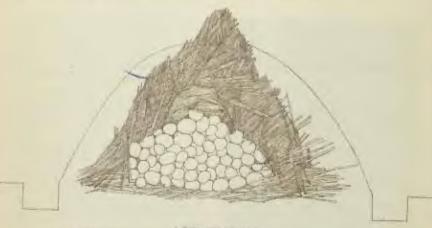
Home Guard, much grown because it is resistant to wart disease. A heavycropping, oval-shaped tuber.

Ulster Prince, the earliest maturing variety in this section. Produces large, well-shaped tubers with shallow eyes. Resistant to wart disease.

Second Earlies

Ben Lomond, tubers are of a soapy as distinct from floury texture; oval and of a good shape.

Craig's Royal, tubers slightly soapy. A very heavy cropper.



Over them with a 4-in, thick layer of straw followed by a 6-in, layer of packed soil, and allow a twist of straw to pass through the top of the clamp to ventilate it

Dunbar Rover, produces floury tubers of good quality and size.

Olympic, a delicious variety. The tops are sturdy and short and the flowers are mauve.

Main-crop

Arran Banner, flattish large tubers, Good quality and very heavy cropper.

Arran Consul, excellent for poor land. Tops sparse and open, longish tubers.

Arran Victory, perhaps the latestkeeping variety. Round tubers, purple in colour.

Dr. McIntosh, a white, floury, kidney potato. Resists potato blight.

Kerr's Pink, a good northern variety. Likes heavy soils and a high rainfall.

King Edward VII, a very popular potato, but not a heavy cropper, unless the soll is loamy and peaty. Smooth white skin with pink splashes.

Majestic, an enormous cropper, large kidney-shaped tubers, but rather soapy.

SALAD POTATOES

Some special varieties of potatoes are grown for salad. They have waxy flesh and a nutty flavour and must always be served cold after cooking.

The Congo, a purple, black-fleshed variety of excellent flavour.

Fir Apple, a pink-skinned potato with lemon-coloured flesh.

The tubers of both these varieties should be planted early in May 1 ft. apart in rows 1½ ft. apart. Lift the crop in October and store in boxes of sand in a frost-proof shed.

RADISHES

There are two main types of radish: the large winter kind and the small varieties that are grown for use in salads.

SOIL PREPARATION

Radishes do not need deep soil for they are not in the ground long; but they require plenty of fine organic matter in the top 3 or 4 in. so that they can grow quickly and never be short of moisture. Prepare the plot by forking in well-rotted compost at the rate of a bucketful to the yard run, or damp sedge peat at a similar rate. In addition, give fish manure at 2 oz. to the sq. yd.

SOWING

Before sowing the seed, see that the surface of the soil is not lumpy; treading and raking may be necessary to make the surface level and fine. Sow the first seeds in a sunny, sheltered spot in February in the south and in late March in the north. Cover the ground with straw after this

first sowing, and remove after germination. From this time on it should be possible to make successional sowings every three weeks until late August.

The seed may either be sown in drills in. deep or broadcast. So that all the roots may be eaten while they are fresh and tender, do not sow more than one s-ft. row at a time, or a patch bigger than half a sq. yd. Sow thinly because it is not worth while thinning out the roots. Although sowing should be shallow, pat down the soil with the back of a spade after the seeds are covered to make it really firm.

GENERAL CARE

Do not allow radishes to suffer from lack of moisture. In dry summers use a squarearea rainer to provide overhead irrigation for half an hour at least once a week. Radishes should be grown quickly or the roots will become coarse and fibrous.

VEGETABLES

HARVESTING

Pull as many roots as are needed when they are young and tender. Any plants that are not required should be thrown on the compost heap. If mixed seed is grown it is possible to have a variety of whites and reds, as well as longs and shorts and certain kinds that are red and white.

RECOMMENDED VARIETIES

Rounds

Saxa, small scarlet roots. Good in the north.

Sparkler 50/50, the top half is scarlet and the bottom ivory.

Turnip Red, bright red skin with tender, crisp, white roots.

Longs

Icicle, a pure white long variety. Good flavour.

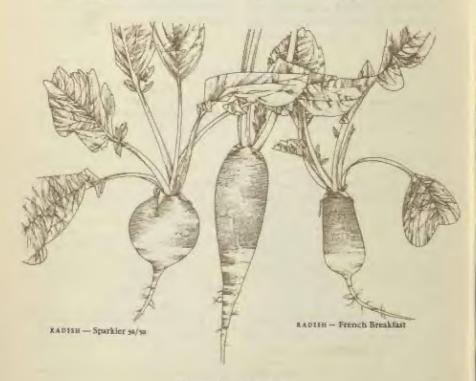
Wood's Early Frame, an early long scarlet,

Ownle

French Breakfast, a deep crimson with delicious white flesh. Roots solid, sweet and oval.

WINTER RADISHES

These make a good vegetable served hot in the winter. Sow the seeds in drills 1 in. deep and 9 in. apart in mid-July in the north and mid-August in the south. Thin to one plant every 6 in. a month later. Dust with B.H.C. or lindane to



LADISH - Wood's Early Frame

keep down flea beetle for the first three weeks after seedlings appear. Hoe regularly to keep down weeds. Harvest in the winter.

RECOMMENDED VARIETIES

Black Spanish Long, rather like long

beets. The skin is black and the flesh inside pure white, Strongly ilavoured,

Black Spanish Round, round, blackskinned roots the size of small turnips,

China Rose, an oval pink variety; roots the size of round beet, with white flesh.

RHUBARB

Although rhubarb is used as a fruit, it is grown in the vegetable garden. The crop is a permanent one and should be planted in a corner on its own. Planting the right varieties will ensure supplies of rhubarb from February until mid-summer.

SOIL PREPARATION

Rhubarb will grow in almost any soil but does best on a heavy loam. The ground requires manuring heavily a few weeks before planting; dig in to at least a spade's depth well-rotted animal manure at the rate of 2 bucketfuls to the sq. yd.

PLANTING

Although seed can be sown in a frame in March it is rarely successful. Instead, plant "crowns"—thick roots with one or two large, round buds at the top. In March, make holes with a spade, 3 ft. apart with 4 ft. between the rows, so that roots can be well buried. Only the crowns or thick round buds should be left above the soil. Tread well after planting, to make certain that the roots are completely in contact with the soil. After planting, cover the bed with straw 1 ft. deep if possible, and over it apply a fish fertilizer at 3 oz. to the sq. yd. between the rows.

GENERAL CARE

Every December add more straw to the bed to keep the depth at 1 ft. Every May and September apply more fish manure at 3 oz. to the sq. yd. No other work is necessary as the straw smothers the weeds; and because of the straw, the rhubarb can be pulled very early and its flavour is excellent.

If any flowering stems should appear cut them down immediately.

Lift and divide some of the plants after five years,

USING

Do not pull any stems the first year; after that use rhubarb as needed. Timperley Early can be pulled in February if it has been grown under straw. Hawke's Champagne will usually start in March and The Sutton in April. The latter will go on until well into the summer. Stop pulling about the middle of August to allow the plants to build up big crowns for the following year.

Do not over-pull any plant or it will starve; leave four or five good stems in position. The leaves on these stems will manufacture elaborated sap, and this will help to produce more roots and more stems and leaves.

RECOMMENDED VARIETIES

Hawke's Champagne, perhaps the most appetizing variety of all. Very red stems; most attractive,

The Sutton, the largest of these three varieties, has the great advantage that it never goes to seed. It is therefore much grown in the drier areas of the east of England.

Timpericy Early, a very early variety and a good choice for forcing. The stems are thin but delicious.

SALSIFY

Salsify is a root crop with an unusual texture and flavour.

SOIL PREPARATION

As with most root crops, salsify does best on light loam, but it will grow on most soils. Do not dig fresh dung or compost into the soil, but sow the seeds in soil that was well manured the previous year. Lightly rake in fish manure at 4 oz. to the sq. yd. when preparing the strip of ground early in April, or give a complete fertilizer at 4 oz. to the sq. yd.

SOWING

Sow the seed thinly about the middle of April in 1-in.-deep drills scratched out with the corner of a draw hoe held against a marking line. If more than one drill is needed, allow 1 ft, between them. To save seed it is possible to sow at stations 1 in. apart along the drills, three seeds to a station, and then to thin out to one

plant per station later. If the seed is sown thinly in continuous lines, thin to 8 in. apart when the plants are 1 in. high.

GENERAL CARE

Hoe lightly between the rows, tending to draw the soil up to the plants rather than away from them. Water in dry periods.

HARVESTING

The roots may be dug up for use or storing from the third week of October onward. The roots are hardy enough to be left in the ground all through the winter until they are needed. Great care must be taken in lifting, because the roots oleed badly if they are damaged. If the roots are left in the ground in winter, tender shoots called chards can be taken in March or April and used green or blanched.

The most popular variety is Sandwich Island, which is used in salads.

SEAKALE

Seakale has to be forced before it can be eaten. Its shoots look rather like small rhubarb crowns with similar leaves. The blanched leaf-stalks should be used while young and tender.

SOIL PREPARATION

Seakale grows best in a sandy loam which has been well dug and manured and which has a fairly high lime content. Dig the soil over in October or November, burying fully decomposed animal manure or rotted compost at the rate of one large barrowful to 8 sq. yds. Leave the ground rough for frosts and cold winds to work on. About mid-March fork the soil over lightly, adding fish manure with

a 10 per cent potash content at 4 oz. to the sq. yd. If the soil is not already limy, give a dressing of carbonate of lime.

SOWING

Although it is possible to raise plants from seed sown in March and April in drills 1 in. deep and 1 ft. apart, thinning the seedlings later to 6 in. apart, it takes two or even three years before the crowns are strong enough to use for forcing. It is usual, therefore, to buy "thongs", or prepared root cuttings.

PLANTING

Plant the thongs I ft. apart in rows 1\frac{1}{2} ft. apart. Make a hole with the dibber so that when the thong is dropped into the hole the top will be i in, below the surface of the ground. Firm well afterwards.

GENERAL CARE

Hoe lightly among the plants in the summer and cut off any flower heads as soon as they appear. During the third week of October cut the foliage down to soil level if it has not already died down.

FORCING

In November lift the roots for furcing, and cut off the side roots which are the thickness of a pencil.

Pot up four or five of the main roots in an 8-in, pot, or more roots in a large deep box. Put the potted-up roots in the dark in a temperature of 55° F. (13° C.). Underneath the greenhouse staging is suitable for this purpose if sacking is nailed to the staging to hang down and so keep out the light. Alternatively, a cupboard near the kitchen stove will do.

When the pure white stems of the forced seakale are about 8 or 9 in, long—usually after six or seven weeks—they may be cut. After forcing, the roots are of no further use. Cut them up and throw them on the compost heap.

It is possible to force seakale in the open by earthing up the soil over the plants to a depth of 9 in. This cannot be done until the late autumn, and only when the soil is friable and dry. In a warm, sandy loam, seakale will grow up through the ridges thus formed. It is impossible to force seakale in this way in heavy soil.

Cut the heads at the base with a small strip of root attached to prevent drying out. Then when all the seakale has been forced or cut, pull down the earthed ridges with a draw hoe and allow the plants to grow naturally in the sun to ensure good growth.

PROPAGATION

Propagation is by root cuttings. Cut off straight, 6-in. long side growths, called thongs, from the established roots in November. Trim the thongs, making the tops square and the bottoms slanting so as to remember which is the right way up. Tie them into bunches of a dozen, stand them upright in the lee of a greenhouse and cover them with soil or fine ashes I ft. deep. By the early part of the following March the top of each thong will have developed a number of buds. Leave only one or two buds on each thong that is to be planted.

RECOMMENDED VARIETY

Lily White, pure white when forced. Highly flavoured and a heavy cropper.

SHALLOTS

Shallots are one of the first vegetables to be planted each year and one of the easiest to grow. The bulbs are grown almost entirely for pickling but they can be used also as a substitute for onions. They have a milder flavour than onions and have the advantage that they keep very well.

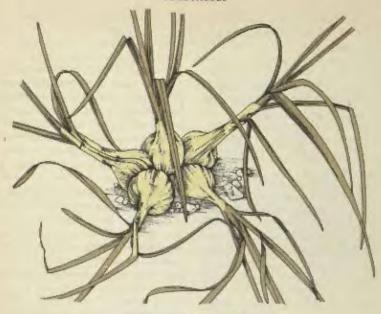
SOIL PREPARATION

Where the ground has been manured for a previous crop it is only necessary to fork it over. If the soil is poor, lightly rake in half a bucketful of well-rotted compost or sedge peat per sq. yd. Afterwards tread the ground evenly to firm it.

PLANTING

Shallots can be raised from seed, but this is not the usual practice as they bolt easily. Sets of bulbs for planting out are obtainable by weight (12 or 13 to the lb.).

Choose an open, sunny position, on high ground if possible as good drainage



SHALLOT-Common Shallot

is an advantage when planting while the soil is still cold.

Plant bulbs as early as possible in February in the south and late in March in the north. Allow 6 in, between bulbs and 1 ft, between rows. Push the bulbs into the ground so that they are half buried. Two or three days after planting check that worms have not pushed the bulbs out; if the bulbs are loose firm them down again.

GENERAL CARE

Hoe lightly between the rows to keep down weeds. About the third week of June, if the weather has been dry, give the plants a feed of Liquinure or Bio Humus, at the rate of up to a pint per plant after dilution according to the manufacturer's instructions.

HARVESTING

Fourteen days after the leaves start to turn yellow, the clusters of bulbs which will have developed should be lifted by inserting a fork underneath the clusters and pressing the handle down carefully; leave the bulbs on the surface of the soil. A week later put the clusters of bulbs on a path or the tin roof of a shed to continue ripening and turn them slightly every day. After a week of this treatment divide the clusters into separate bulbs. They can then be stored or used.

RECOMMENDED VARIETIES

Common Shallot, small, brown English variety.

Russian Shallot, a much larger bulb. Reddish-purple in colour.

SPINACH

There are two main types of annual spinach: round or summer spinach and prickly or winter spinach.

SOIL PREPARATION

A well-worked soil, rich in organic matter and therefore retentive of moisture, is good for spinach, and for winter spinach light soil is most suitable. The plants go to seed quickly on poor soil and dislike sandy soil because there is no reserve of moisture. As spinach grows quickly if well fed, it is often used as an inter-crop between peas or beans, or as a catch crop before planting out brassicas or leeks.

When forking over the ground, dig in fully rotted dung or compost at the rate of a bucketful to the sq. yd. After treading the ground over to firm it and break down the lumps, apply a fish manure at 4 oz. to the sq. yd., raking it in lightly when the surface is being levelled and a tilth prepared. A mixed fertilizer of bone meal, hoof and horn and sulphate of potash in the proportions of 4:2:1 can be used instead at the rate of 4 oz, to the sq. yd.

SOWING: SUMMER SPINACH

Sow summer spinach seed in early March in the south and late in March in the north, choosing a well-sheltered position. Make three successional sowings at 14-day intervals. Take out drills 1 in. deep and 1 ft. apart with the corner of a draw hoe and sow the seed very thinly in these drills. Three weeks later thin the seedlings to 6 in. apart. If the plants are first thinned to 3 in. apart and thinned again three weeks later, the second thinnings may be cooked and eaten whole.

GENERAL CARE

Do everything possible to grow the crop quickly. A 1-in.-thick layer of lawn mowings on either side of the rows for a width of 6 in. will help, but do not put the mowings on deeper or they will heat up and damage the plants. Water and hoe regularly and feed with liquid manure. Top dress the rows with nitrate of soda at the rate of \{ \text{oz} oz. to the yard.}

SOWING: WINTER SEINACH

Sow the winter spinach seed during the second week of August, and make successional sowings every 14 days until about the third week of September. Choose a shadier position than for spring sowing and soak the seed in a cup of water the day before sowing. If the soil is heavy clay it is advisable to prepare a raised bed 3 ft. wide: dig the soil out 3 in, deep to a spade's width on either side of the bed and throw this evenly on top. Such a raised bed keeps drier in the winter and allows excess rain to drain away. Winter spinach needs some protection from mid-November onward, either by putting bracken or straw between the rows or by covering the plants with cloches.

HARVESTING

Always pick summer spinach when the leaves are young and tender; it is possible to remove most leaves from the plants leaving only a few in position to continue the growth. When harvesting winter spinach, however, pull only the largest leaves, and then only a few leaves, of each specimen. At the end of the winter the plants will die,

RECOMMENDED VARIETIES

Summer

Goliath, large leaves of dark green. Gives heavier yield than most strains.

Monstrous Viroflay, a large, roundleaved variety. Mid-green. Apt to go to seed.

Reliance, very large, thick leaves, dark green in colour. Victoria Long Standing, dark green leaves. Slow to go to seed.

Winter

Long-standing Prickly, a hardy, largeleaved plant. It stands a long time before running to seed.

Perpetual, gives supplies throughout autumn and winter when ordinary spinach is not available.

SPINACH BEET

Spinach beet is a leaf crop which stands well throughout the winter, and yields for many months, it is also known as edible-leaved beet or perpetual spinach. The flavour is very similar to that of the annual spinach.

SOIL PREFARATION

Spinach beet will grow satisfactorily in most soils.

Dig in rotted compost at the rate of a bucketful to the yard run well before sowing time, or sow on land that was well manured for a previous crop.

SOWING

To have a supply of perpetual spinach all through the year, make one sowing during the middle of April and a second sowing about the middle of August. Take out drills 1 in. deep and 15 in. apart and sow the seed thinly.

When the plants come up, thin the seedlings out to 8 in, apart in the rows. If any gaps appear, transplant some of the seedlings.

GENERAL CARE

Hoe lightly with a Dutch hoe to keep down weeds, and if August and early September are very dry, see that the second sowing is well watered.

HARVESTING

Pick the leaves when they are a usable size, together with the stems. Do not leave the foliage to grow old and overlarge or the crop will be reduced, Even when leaves are not required for the house, pick them and put them on the compost heap; the yield will continue because new leaves will grow in place of the old ones. Allow the autumn-sown plants to build themselves up well before a hard winter sets in, by picking fewer leaves from them.

RECOMMENDED VARIETIES

Luculius, produces pale yellowishgreen leaves, large and closely curled.

Perpetual, an excellent substitute for annual spinach.

NEW ZEALAND SPINACH

This plant has thick leaves that creep along the ground rather like decorative ivy. As it comes from islands in Australasia it does not mind hot, dry weather. It does not bolt like true spinach.

SOLE PREPARATION

As for annual spinach.

SOWING

Sow the seed in John Innes seed compost in boxes or pots late in March, in a greenhouse or frame. When the seedlings come through put the pots or boxes on shelving near the glass.

At the beginning of May put the plants out in a frame to harden off before they are planted outside.

If a greenhouse is not available, sow the seed in the open about the third week in May, putting two or three seeds in clusters 2 ft, apart and covering the seeds with upturned glass jam jars. Thin down to one per station when the seedlings are tall enough.

PLANTING

Plant out at the end of May 2 ft. apart in rows 3 ft. apart.

GENERAL CARE

The plants soon spread over the ground taking up their allotted space and providing their own mulch. Watering may be needed in dry spells and weeds should be kept down.

HARVESTING

When the stems are about 1 ft. long, pinch out the growing tips. This will encourage the plants to produce more shoots. As the plants get larger keep pinching back the stems by about an inch and pick the leaves off as they are wanted.

The tips that are pinched out are quite delicious when cooked.

SQUASHES

The squash is a kind of firm-fleshed vegetable marrow, and its name derives from the Red Indian word askntasquash. The fruits of summer squashes are used as they are ready in the summer, while the fruits of winter squashes are allowed to grow until they are their full size, when they are stored in a dry, frost-proof shed for use as required.

There are two types of squash—bush and trailers.

The plants are grown in exactly the same way as vegetable marrows.

RECOMMENDED VARIETIES

Summer

Golden Summer Crookneck, a bush type, producing orange fruits.

Noodle, a trailing type. Pick the fruits when s in, long.

Prolific Straight Neck, a bush type, with creamy-yellow fruits.

Winter

Banana, has grey-green fruits with flesh of banana texture, orange in colour.

Hubbard, a trailer with huge fruits which store well.

SWEDES

Swedes are a hardy winter root vegetable. They have a higher sugar content than turnips, take a longer time to mature, and when they are harvested they are larger and keep better.

SOIL PREPARATION

Swedes will grow on most soils provided they are well cultivated. If possible, sow on land which has been well manured for the previous crop; no manure or compost should be given to the soil for this root crop. On the other hand if the ground is not already alkaline it should be limed because swedes are liable to club root disease. After forking over the soil lightly and treading the ground firm, lightly rake in a fish manure or a complete fertilizer at 1 oz. to the sq. yd. Afterwards, if the soil is not limy, give

carbonate of lime at 6 oz. to the sq. yd. as a top dressing.

SOWING

Sow the seed thirdy in drills 1 in, deep and 11 ft, apart. Thin to 10 in, or 1 ft, apart when the seedlings are 1 in, high. Sow early in May in the north and late in May or early june in the south.

GENERAL CARE

Hoe regularly between the rows and use B.H.C. dust, D.D.T. or lindane to prevent attacks by turnip flea beetle.

HARVESTING

Swedes are so hardy that they can be left in the ground in the winter. If it is likely that the soil may freeze so hard that it is impossible to lift the roots, dig some up and store them in boxes in a shed or in a clamp in the same way as potatoes.



STREET CORN-Golden Glory

RECOMMENDED VARIETIES

It is better to buy seed of either the purple top or the bronze top kinds.

Purple Top

Kelvedon Advanced, globe-shaped; free from neck, good quality, suits north or south.

Tipperary, rosy purple globe. Good, heavy cropper.

Bronze Top

Lord Derby, elongated globe. Good keeper and heavy cropper,

Ne Plus Ultra, a round root with dwarf foliage. Good keeper. Suitable for small gardens.

SWEET CORN

Sweet corn is a specially selected type of maize and is a vegetable that is increasing in popularity. The season in Britain is short.

SOIL PREPARATION

Almost any soil suits sweet corn provided it has been amply fed with well-rotted organic matter. If possible use ground that has been well manured for a previous crop and kept clean by shallow cultivation. Where this is impossible, dig the plot to a spade's depth and add half a bucketful of well-rotted farmyard manure or compost to the sq. vd. Allow the ground to settle for at least a fortnight. A day or so before planting or sowing, rake into the top inch of soil fine sedge peat at the rate of half a bucketful to the sq. yd., to give a 6-in,-wide strip on either side of the plants. Add a fish manure at 4 oz. to the sq. yd.

SOWING

To give sweet corn as long a season's growth as possible while still having the cobs ready early in the summer, sow the seeds in Eclipse No-Soil compost or in John Innes potting compost No. 1 in March. Put two seeds in the centre of a 2-in. pot filled with the compost and thin down to one plant per pot if both seeds grow. Stand the pots on the staging of a greenhouse with a temperature of 55° F. (13° C.) and water from time to time. Early in May start the hardening-off process by putting the plants out into a frame. Plant out in the open about the third week in May; It helps pollination if the planting is done in 2 by 1 ft. rectangles rather than in a row.

If no greenhouse is available, sow two seeds at stations 2 by 1 ft. in the open in the middle of May. Where both seeds grow, thin down to one per station. It helps to ensure good germination if upturned glass jam jars are placed over the seeds. These need not be removed until the plants are about 3 in. high. A third method of sowing is to use cloches or ganwicks in early April in the south and late April in the north. Sow the seeds 9 in. apart and remove the glass when the growth of the foliage makes it necessary.

GENERAL CARE

Earth up the plants a little when they are about 1 ft. high and they will produce stronger roots, which will give the plants more support. During the summer, the plants may need three-quarters of an hour of artificial rain or a good watering with hose or can once a week. Mulch the soil all over the plot to conserve as much moisture as possible.

HARVESTING

The cobs should be ready for harvesting about three or four weeks after flowering finishes. The tassels will turn brown and begin to lose their silkiness. Pull back the protecting green sheath and press one or two of the grains with the thumbnail. The contents should spurt out with the consistency of thick cream.

If the cobs are pulled too early the grains will be watery; if pulled late, the grains will be hard, dry and unpalatable.

RECOMMENDED VARIETIES

Early Golden Market, early, yellowgolden grains.

Golden Bantam, tender yellow grains. Very sweet and fairly hardy.

Golden Glory, cobs 8 in. long, with 14 rows of grains. Matures early and is a heavy cropper.

John Innes Hybrid, an early maturing, sweet variety. Grows up to 5 ft. tall.

TOMATOES

Though much of the tomato growing in Britain is done in greenhouses (see The Use of Class in the Garden) it is possible to get good crops out-of-doors if the right varieties are grown. In very cold, wet years the plants are often attacked by potato blight disease. Lack of sunshine also means that the fruit will not ripen in the open, and it has to be brought indoors to complete the ripening.

It is usual either to buy plants ready to put out in May or June, or to raise plants from seed under glass. It is less satisfactory to sow seed out-of-doors but it can be done, provided the seedlings are carefully protected.

When buying tomato plants be sure to get well-hardened, sturdy, dark green specimens. At planting time tomatoes should be about a in, high; do not put in plants that look weak, feathery or discased, or that seem to have large spaces between the leaves.

SOIL PREPARATION

Light or heavy soils may be used for tomatoes. It is advisable, however, to dig heavy soil into ridges in November so that a greater surface area can be broken up by frost and cold winds. In April put well-rotted compost or manure into the furrows at the rate of one bucketful to the yard run. Then pull down the ridges with a draw hoe, to cover the manure and form new, shallow ridges, 2½ ft. apart, in which the tomatoes may be planted.

If the tomato plot is of light, sandy soil, dig in manure during the spring.

SOWING

The most important point to remember when growing from seed, however the seedlings are to be raised, is to buy varieties suitable for outdoor growing.

SOWING IN THE GREENHOUSE

Sow seed any time between February and May, 2 in. apart in boxes of John Innes seed compost or Eclipse No-Soilcompost, and cover with a sheet of glass until germination. Then give as much light as possible, and after about 28 days, pot up into 3-in, pots of John Innes potting compost No. 1. These plants will need hardening off before planting out. Full instructions are given in The Use of Glass in the Garden.

SOWING IN FRAMES

Sow early in April in 3-in, pots filled with John Innes seed compost or Eclipse No-Soil compost.

Sow three seeds, \(\frac{1}{4}\) in. apart and \(\frac{1}{4}\) in. deep in the centre of each pot and thin the seedlings down to one per pot. Leave in the frame until the end of May, hardening off before planting out.

SOWING IN THE OPEN

The time to sow seeds where the plants are to grow is early in May. Sow three seeds \(\frac{1}{2}\) in, deep at each station and cover with an inverted \(\frac{2}{2}\) lb, glass jam jar. The stations should be 15 in, apart in rows \(\frac{1}{2}\) ft, apart. Thin down to one plant later if necessary.

PLANTING OUT

A day or two before planting, level the ground and rake in a fish manure with a 10 per cent potash content or a complete fertilizer at the rate of 4 or 5 oz. to the sq. yd. The main planting is done late in May in the south and early in June in the north, when all fear of frosts has passed. It is no use attempting to plant tomatoes if the soil is really wet and cold.

Make the rows 2½ ft, apart and allow 15 in, between the plants. To disturb the roots as little as possible when planting, make a good hole with a trowel and plant the ball of soil containing the roots complete. Plant so that the top of the ball is about ½ in, below the level of the soil. Use the handle of the trowel to firm the soil all round the plant. Immediately after planting, push a strong 4-ft, bamboo into the ground at the side of the root ball.

GENERAL CARE

After the first truss of flowers has set, give liquid plant foods with a 10 per cent potash content once a week during the season. As it is more convenient if the plants are kept to a single stem, remove the side shoots which appear at the point where the leaves join the main stem. Be sure to remove only the side shoots, and not to damage the incipient flower truss. The side shoots can be pinched out between finger and thumbnail, but it is safer to cut them away with a knife.

Never handle tomato plants with nicotine-stained fingers or use a knife that has cut tobacco, or tobacco viruses will be transferred to the tomatoes.

As the plants grow, tie the steins of the plants to the bamboos with green cotton twine or raffia. Wrap the twine or raffia twice round the bamboo and then put a loop round the plant and tie it to the bamboo; if the tie is too tight it will cut into the stem as the plant grows.

As the plants will stop growing and

VEGETABLES De-shooting

TYING AND DE-SHOOTING TOMATOES

After planting tomatoes, push strong bamboo canes into the ground at the side of the root ball. As the plants grow, tie each stem to a cane. Remove side shoots that appear where the leaves join the main stem, to ensure that the plants are kept to a single stem

cropping when the short days of October come or an early frost touches them, pinch out the growing point of each plant during the first week of August, removing the top inch. The elaborated sap will thus be directed to swelling and tipening the fruit rather than to making any further growth. It will still be necessary, however, to continue to remove the side shoots carefully.

Do not remove the leaves of the tomatoes until they turn yellow: they manufacture the elaborated sap that feeds the fruit and helps it to mature.

BUIGHT

Watch out for potato blight disease, which usually occurs in late July in the south and about the second week of August in the north. As a preventive, spray with Bordeaux mixture and spray again a fortnight later.

HARVESTING

Use the tomatoes as they ripen. If, at the end of the season, there are trusses of green tomatoes on the plants, cut them off to ripen on a windowsill, or wrap the individual fruits in newspaper to ripen off in a drawer.

Alternatively, if ganwicks or cloches are available, put down a layer of straw or sedge peat on the strips where the plants are growing and, having taken away the bamboos, lay the plants down as they are on the straw or peat and put the cloches or ganwicks over the top. The fruits will continue ripening while the plants are on the ground.

RECOMMENDED VARIETIES

Be sure to buy the seed of varieties which have been specially raised for outdoor growing.

Essex Wonder, excellent quality red fruit. Fine cropper.

Harbinger, medium-sized fruit of good quality. Plants are short-jointed and can carry a heavy crop.

lbbetts Seedling, fine quality, solid fruit for shape and size.

Open Air Wonder, bears a heavy crop of pear-shaped fruit.

Orange Sunshine, a yellow variety. Round, regular fruit on vigorous plants.

DWARF OR BUSH TOMATOES

Bush tomatoes do not need staking or pinching. Plant them 15 in, square in double rows. They will grow less than I ft, high and will spread themselves over the ground. If the soil is covered with sedge peat \(\frac{1}{2}\) in, deep at planting time, it will help to keep the fruit clean.

RECOMMENDED VARIETIES

Amateur, very early. Small fruits. Dwarf Gem, medium-sized fruits with pale green backs.

TURNIPS

Turnips require soil rich in organic matter so that the roots mature quickly and are tasty and tender.

SOIL PREPARATION

Do not try to grow turnips on sandy, thin top-soils. Turnips grow well on fertile, loamy soil which retains moisture well, though the later main-crop turnips are not so particular, and will grow on loams and clays provided they are well cultivated and manured.

Dig in well-rotted compost and dung at the rate of one large barrowful to 8 sq. yds. In addition, apply a fish manure with a 6 per cent potash content at 3 to 4 oz. to the sq. yd. and, unless the soil is limy or chafky, give a surface dressing of carbonate of lime at 7 oz. to the sq. yd.

SOWING

Sow the first early turnips in drills 9 in. apart and ½ in. deep early in March in the north and late in March in the south. When the plants are through, thin them out to 4 in. apart in the rows. A second sowing of earlies may be made early in April in the north and in mid-April in the south, in drills ½ in. deep and in rows I ft. apart. Later thin the plants to 6 in. apart in the rows.

Sow winter turnips about the middle of July in the north and at the end of August in the south, with the drills 1 in. deep and 11 ft. apart. Thin the seedlings

to 1 ft, apart in two separate operations.

Sometimes turnips are grown entirely for their leaves. The sowing is then done early in September with the drills 2 ft. apart. Sow the seed thinly and allow the plants to grow naturally. When the tops are about 8 in. high they are ready for use.

GENERAL CARE

Turnips are always very badly attacked by turnip flea beetle, so it is necessary to dust with a B.H.C. dust, D.D.T. or lindane when the seedlings first come through the ground and often even before this. In order to ensure quick growth in dry weather, use a square-area rainer along the rows for half an hour once every week. The ground may be mulched with sedge peat 1 in, deep on either side of the plants.

USING

Pull the earlies when the roots are young and fresh. Never let them get coarse or go to seed. Winter turnips may be left in the ground until they are needed, or they may be dug up in November and, when the tops have been cut off, stored in a clamp in the same way as potatoes.

RECOMMENDED VALLETIES

Early

Early Greentop Stone, white globeshaped roots with green tops. Hardy.

Red Top Early Milan, a purple-topped, flat-shaped root. Very early. Early Snowball, a medium-sized, white globe variety of good quality.

Early White Milan, flat white root of good quality. One of the earliest varieties. Winter

Golden Ball Selected, a small-topped,

yellow, globular variety. Withstands the winter well.

Manchester Market, has solid, sweetfleshed, white, globular roots with green tops. Hardy variety. Suitable for sowing at any time,

WATERCRESS

Although grown in shallow water, watercress will often crop well in trenches or troughs which can be kept moist. A shady spot should be used if possible.

SOIL PREPARATION

Fork plenty of fine organic matter into the bottom of a trench a spade deep and a spade's width across; sedge peat is ideal for the purpose, used at the rate of two large bucketfuls to the yard run.

SOWING

If plants are to be raised from seed, sow the seed thinly in John Innes seed compost in boxes in early April, and cover with a little silver sand. Put the boxes on the staging of the greenhouse with a temperature of \$5° F. (13° C.). Water through the fine rose of a can.

When the seed germinates, prick the seedlings out, 3 in. apart, into other boxes containing John Innes potting compost No. 1. A fortnight later put the boxes out in a cold frame to harden off the plants. It is important at this stage to keep them in the sunlight.

PLANTING

Soak the bottom of the trench and plant out the seedlings 6 in. apart, zigzag fashion, Water well at least once a week from then on.

GENERAL CARE

A month later start feeding the plants every week with diluted liquid manure. If any plants start to flower, cut off



the tops to prevent flowering shoots developing.

Keep slugs at bay with Slugit pellets.

Cut the watercress when needed during the summer. The more the tops are cut the more growth will be made. The bed will need to be completely cleaned at the end of the season.

There are no true varieties of watercress, but there are bronze and green types. The bronze type is generally preferred and has larger leaves, but the green type is easier to grow,

EXHIBITING

For many people, one of the most satisfying aspects of gardening is to enter their produce for competitions at horticultural shows.

Up and down the country, shows of this kind are a traditional feature of village and town life. They are usually organized by local horticultural societies or by village produce associations, and nowadays many firms sponsor shows for the benefit of their employees. On a more ambitious scale, town councils or corporations may arrange shows at their town halls, or in marquees in their main parks.

SCHEDULE

Before entering for a show, obtain a copy of the show schedule, and carefully read the rules and notes it contains. They will explain precisely what the organizers expect: how many examples of the fruit, vegetable or flower must be shown; the closing date and fee for entries; the times between which exhibits must be staged.

Novice competitors will find that experienced entrants and show judges will give advice on growing for exhibition and on the general management of entries. The Royal Horticultural Society has published a book entitled Horticultural Show Handbook (see Bibliography), for the guidance of exhibitors and show officials.

STAGING

Staging—the arrangement of entries on the judging bench—is very important. Although marks are not awarded for staging, exhibits that are attractively displayed will certainly gain the judges' attention. Show organizers often provide plates, frames, etc. for staging, so make enquiries before the show.

FRUIT

PREPARATION FOR SHOW

For a local show most fruit may be collected and prepared the day beforehand,

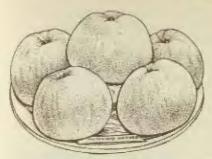
All fruit should be ripe, and although apples and pears may be shown in an unripe condition, preference is generally given to ripe fruit that is in season. Overripeness in any fruit is a serious defect.

Do not remove the natural bloom from fruit, particularly that of grapes and plums, and on no account polish apples. Always leave the stalks on all fruit for exhibition, and make sure that all specimens chosen are free from blemishes and disease or pest damage.

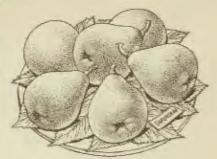
Uniformity of size, form and colour is

most important, and is usually awarded 25 per cent of the total points. For show purposes all fruits, except dessert apples, should be somewhat larger than average for the variety. Dessert apples should be about 23 in. in diameter, although a slightly larger size is permitted for a few varieties, such as Blenheim Orange, Charles Ross, Rival and Wealthy. For dessert apples to be more than 3 in. in diameter is usually considered a fault.

If there is some doubt as to whether a particular variety of apple or pear belongs to the culinary or dessert class, consult the R.H.S. Hersicultural Show Handbook or a good fruit book or catalogue for guidance.



STAGING APPLES Choose apples that are of a uniform size, shape and colour, and exhibit them on a plate made of stiff paper



STAGING PEARS Show pears on a plate covered with fresh green leaves, Leave the stalks on fruit for exhibition

SOFT FRUIT

For show purposes there are only two kinds of currant. Black is one kind; red and white are different types of the other kind. Therefore in a class for four kinds of soft fruit, red and white currants cannot be included as two separate kinds.

The red currants chosen should be the largest of the crop and of a brilliant colour. Black currants and blackberries should be jet black and bright.

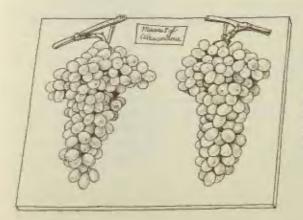
Plums and gages are classed as stone fruit and, therefore, are not eligible for inclusion in soft fruit classes.

TRANSPORT TO SHOW

If the fruit has to be transported any distance, wrap hardy fruits separately in tissue paper, and pack in wood wool or crumpled newspaper in a cardboard box to avoid bruising or spoiling the bloom.

STAGING

Place the fruit, of whatever kind, on a bare, plain plate (stiff paper plates are ideal), or on large, fresh, broad green leaves on a plate. Do not include more than one variety of fruit in the same dish if the schedule specifies "one variety".



GRAFES
FOR EXHIBITION
Burnches of grapes look
effective on a board
covered with a threet of
white paper. It is particularly important that
the natural bloom
should not be ruibbed off





VEGETABLES

In the vegetables section, merit depends on condition, size, uniformity and freedom from disease or pest. Condition covers cleanliness, freshness, tenderness, and absence of coarseness and blemishes. The size of the vegetables may be somewhat larger than that normally seen at a greengrocer's; however, the judges look not only for size but for quality as well. Uniformity means similarity of size, form and colour.

KINDS OR VARIETIES

The words "kinds" and "varieties" occur frequently in show schedules, so be careful to exhibit exactly what is specified. For instance, if "four kinds of vegetables" are asked for, then potatoes, cauliflowers, carrots and peas could be entered, not four different varieties of one kind of vegetable. Kelvedon Wonder and Meteor are different varieties of the same kind of vegetable—peas—so both would not be eligible for the same class.

Schedules often include, at the end of a section, a class for "any other kind of vegetable not included above", and here again confusion can arise. If, for instance, there is a class for "long carrots" in the main section, but not a class for "stump-rooted carrots", the latter could not be included in the class for "any other vegetable", as they are merely different types of carrot, already provided for in the schedule. The

same rule applies to globe and long beet.

But for show purposes savoy cabbage is a different kind of vegetable from green cabbage, so that savoy cabbage and green cabbage could be exhibited as two separate kinds of vegetable.

CARROTS AND PARSNIPS

Carrots of show standard are not easy for beginners to produce, but a dish of good long carrots is well worth staging and looks very impressive on the bench. Cut back the tops to about 1 in. and tie neatly with raffia or green twist. Carefully sponge the roots with clean, cold water, but do not scrub or treat them roughly or the tender skin will be damaged. Remove root hairs but preserve the long tap root.

Although it is not easy to lift wellgrown long carrots in dry weather without breaking the root, it can be done. Carefully dig down at the side of the root, then flood the hole with water. When the water has drained away, case the root



THREE HEADS OF CELERY
Clean the roots and trim them back to
the base of the leaf stalk. Choose uniform, solid heads and ite with raffia



CARROTS

Cut back the tops to about 1 in, and tie neatly with raffia or green twist. Carefully aponge the roots, then remove the root hairs but preserve the long tap root. A plate covered with parsley makes an effective background

from the other side, pulling gently but firmly. It should then come out intact. The same treatment can be applied to parsnips. While the carrots are growing, earth them up or give them a good deep mulch, to prevent the shoulders becoming greened by exposure, which in keen competition is a major fault. Stage the carrots or parsnips attractively on a plate covered with parsley.

CAULIFICWERS

Cauliflowers for exhibition should have clean, large, white, even curds of good texture. Trim the stems before exhibiting. A pair of really good cauliflowers is extremely valuable for inclusion in a collection of vegetables.

CELERY

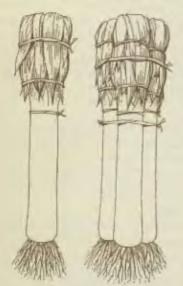
Well-grown celery makes an imposing exhibit. The heads should be large and solid (but not coarse), well blanched and free from slug or other pest damage, with roots neatly trimmed back to the base of the leaf stalks. The stalks should be thick and not stringy or pithy, and should be tied together at the top. There should be

no sign of seeding. Judges may cut through the middle of the heads to see if seeding has started.

1EEES

Blanched leeks, as distinct from pot leeks, are first-class subjects for the show bench. Really good leeks, 2 to 2½ in. In diameter with at least a 1-ft. length of blanch, stand a good chance of winning the "Best in the Show" Blue Ribbon. Treat the leeks very carefully. To lift them from the ground, tie the tops together in at least two places, then fork round the leeks and ease them out.

Do not cut off the roots, but hold them under running cold water, teasing them out until all the soil is removed and the roots are white and clean. Just before leaving home for the show, remove the minimum number of damaged, discoloured or split outer leaves until good, clean, perfectly-blanched leeks are left.



LEEKS
Clean but do not cut the roots, Just before exhibiting, remove damaged leaves,
and its the follage



After withering, cut back the tops of autumnt-sown onions to about 3 in., then turn there down and tie with raffia



STAGING ONIONS Display the onions on carabboard rings. The rings as the back are deeper than those in front

Then wipe them with a damp cloth so that they are perfectly white. Wrap each leek in clean white tissue paper to protect it from discoloration, then bundle three or six leeks together in several sheets of newspaper and tie carefully. Exhibit the leeks with full length of leaves neatly tied up, or with the ends just tipped if they are extra long.

MARROWS

Judges usually stick a thumb-nail into the top end of marrows to test the vegetables' youth and tenderness, and if the skin is hard and resists the nail, the marrows will be passed over. In shows from July onward, there is invariably a class for "a pair of table marrows". In such a class it would be a great mistake to exhibit a pair of very large marrows weighing 20 lb. apiece; what is required is a young pair.

about 10 in. long, well matched, and just right for eating.

ONIONS

There is more merit in winning first prize in this class than almost any other, except that for a collection of vegetables, for onions are a great test of the grower's skill; half a dozen onions weighing about 2 to 3 lb, each will almost certainly win a prize at a local show. The onions should be sound, well matched, well ripened and have thin necks. Provided they are being entered in open classes, there is no reason why the same six onions should not win first prize at half a dozen different shows. The disadvantage of this practice is that judges poke their thumbs into the base of the necks of the onions to test for soundnexs, and this eventually induces softness, thus rendering the onions unfit for further competitions.

Spring-sown onions should always be shown with their tops, but the tops of autumn-sown onions and those produced from a box-sowing in January should be allowed to wither; they should then be cut back to about 3 in., turned downward, and neatly tied with raffia or green twist.

To stage six onions really effectively, make six rings from a cardboard cylinder 2½ in. in diameter, cutting three rings 2 in. deep and the other three 1¼ in. deep. Set out the rings with the taller ones at the back and place the onions on them.

TEAS.

For exhibition purposes choose young, large, well-filled pods that are uniform in size, have their natural bloom intact, and show no signs of greyness. Cut the pods from the plants with a pair of scissors and handle them only by the stalks. To test for fullness, hold the peas up to a strong light to see the seeds. If they are maggoty do not include them in the exhibition entry, as they may well be

the ones the judges open. Stage the peas on a plain plate or in a shallow basket.

POTATOES

Potatoes should be of uniform medium size, shallow eyed, of good shape, and with clean, unbroken skin free from blemishes. Try to stage specimens that are characteristic of their variety.

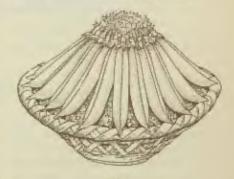
Stage the potatoes on a plate, rose end outward and with the best specimen on top. Place sprigs of parsley between them.

RUNNER BEANS

Runner beans are popular for autumn shows. Twelve beans are usually called for. They should be young, long and straight, of even size, with stalks and little or no outward sign of seeds. The judge will take a sample bean and snap it in two to test for plumpness and tenderness. The break should be clean and the section full, that is, with no piping down the middle. Stage the beans in a row or pile them on a plain plate.

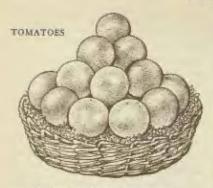
SHALLOTS

Twelve shallots are usually asked for in the schedule, and these should be well ripened, uniform in size, not too large, thin necked, and very firm, with an unbroken outer skin. Shorten the stems to about 1 in., double back and tie neatly.



PEAS

Fill a basket with most covered by parsley, and arrange the pods in a cone



Fill the basket with cotton wool and cover with paraley. Arrange the tomatoes in the form of a pyramid

Stage the shallots, bedded upright on parsley or sand, on a medium-sized plate TOMATORS

For the "grown-out-of-doors" class, select large, perfectly round fruits, uniform in size and of good colour. Be sure that they are ripe but quite firm, and complete with stalk. Stage the tomatoes upside down on cotton wool in a round basket. Be very careful in handling and in transporting to the show, to avoid bruising the fruits. Bruising may induce a soft spot, which the judges are sure to find,

CLASS FOR A COLLECTION OF VEGETABLES

This is generally regarded as the premier class in a mixed show. The winner may secure the Blue Ribbon for the best entry in the show, or a medal if the class carries one.

Four or six different kinds of vegetables are usually required. The quantities of each kind are generally specified in the schedule as being the same as those for the separate classes, but the choice of kinds in the collection is usually left to the exhibitor.

When making up a collection of vegetables, it is important to include the kinds that carry the highest points. The R.H.S. Horticultural Show Handbook gives a scale of points.

The maximum number of points allotted to any one kind of vegetable is 20, and carrots, cauliflowers, celery, leeks, onions, peas, potatoes and tomatoes all carry the maximum points, while runner and dwarf beans and cucumbers carry to points each. These are, therefore, the kinds to choose for a collection. If the exhibitor can include these high pointed vegetables in his collection, he can afford to lose more points on each than a competitor with a mixture of high and low pointed vegetables.

If a number of individual classes are entered as well as the collection, it is best to put the best exhibit in the collection, for this class gains greater prestige than individual classes.

A useful book is Growing Vegetables for Shows (see Bibliography).

FLOWERS

Flowers are usually entered either in specialist shows (such as those for roses, delphiniums or chrysanthemums), or in general shows, which can cover decorative pot plants and cut flowers. But for whatever kind of show, the methods of preparation are the same.

DECORATIVE POT PLANTS

Select good pest-free specimens, of even all-round growth. Remove any dead leaves, and see that any supports that have been used during cultivation are in good, clean condition, and that the pots themselves are clean. The appearance of bulbs grown in pots is enhanced if bright green, clean moss is spread over the soil.

If the pots or bowls cannot be carried to the show by hand, pack them carefully in boxes, wedging small bags of peat between the pots to prevent them from moving. If the plants are tall, see that their stems and flowers are adequately supported.

Arrange the pots or bowls attractively, with the taller plants at the back.

CUT FLOWERS

Select specimens of good texture and colour and of even size and growth. Be careful to avoid those that are already past their full bloom.

Generally, flowers should be cut early on the morning of the show. Remove any lower unwanted leaves from the stems. Then, with the exception of any flowers that are inclined to droop when damp, plunge them to just below their heads in a bucket or can of water. Put them in water as soon as possible, because it does not take long for the stem cells to heal after cutting, and then water is not taken up quickly. To prevent air from entering the hollow stems of plants such as delphiniums, place the thumb over the bottom of each stem immediately it is cut, and then plunge the stem into a barrel of water, removing the thumbonly when the stem is in the water. Allow the stem to fill with water, then plug the end with cotton wool. All the bungs thus provided for hollow-stemmed flowers can be removed when the stems are in water at the show

PACKING

When packing, first see that the stems and flower heads are dry (especially the stems of those that have been standing in water). Then wrap the blooms in tissue paper or cotton wool so that they are separated from one another, and either place them carefully but fairly tightly together in a box lined with soft paper, or wrap each bunch in strong paper or metal foil to prevent bruising and as a protection from the wind.

If the show is within easy distance, packing can be avoided; stand the flowers upright in suitable containers and, for preference, in water.

Follow the instructions in the show schedule as to the number of flowers required in each class, and stage the flowers as attractively as possible in vases, baskets or display frames according to the requirements of the competition. Keep all vases topped up with water.

Defoliating for exhibitions is not only permitted but is often advisable to preserve freshness.

ANNUALS

When exhibiting annuals, make sure that the plants are true annuals and not quick-growing and quick-blooming biennials. The definition of an annual is "a plant that naturally and ordinarily begins and ends its growth, seeds and dies (irrespective of frosts) within twelve months".

Show schedules should state clearly whether or not they permit as eligible in the annual class those perennials that by common usage are regarded as annuals—for instance, antirrhinums.

A useful book is Flower-Growing for Shows (see Bibliography).

CARNATIONS

To obtain show specimens of border carnations, disbudding is essential, coupled with rigorous pest control. Providing the soil is right, do not feed border carnations heavily, as this may result in split calyces; this hazard can often be prevented by slipping a rubber band over each calyx.

Perpetual-flowering carnations, grown under glass, are also excellent subjects



for exhibition, as their continuous blooming means that specimens are nearly always available.

CHRISANTHEMUMS

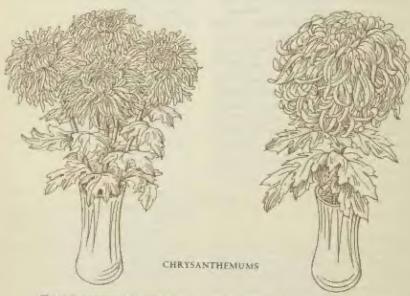
Early-flowering chrysanthemums are exhibited at September shows and the late-flowering varieties in November. Growing chrysanthemums for exhibition demands devotion to the details of cultivation described in Chrysanthemums, and the would-be exhibitor will find it worth while to become a member of the National Chrysanthemum Society, which issues literature on the subject.

DARILIAS

Dahlia exhibits are a most important feature of September shows. The long stems lend themselves to very attractive and imposing displays.

Judging and classification nowadays are almost always in accordance with the rules of the National Dahlia Society, and would-be exhibitors should familiarize themselves with these conditions.

Owing to the difficulties of handling and transporting very large blooms, the smaller types, which are so much easier to manage, are now more often shown.



Choose long-stemmed blooms, and pack the neck of the vase with moss

Stage large blooms singly, supporting the stem with a wire

Size of bloom (see Duhlins) used to be all important, but the National Dahlia Society has ruled that quality must take precedence over size, subject to the flowers being shown in their correct classes. There is one exception to this ruling: for exhibition purposes the small pompon varieties must not exceed a diameter of 2 in.

GLADIOLI

There are three main sections or classifications for gladioli: Grandiflorus, Primulinus (florets hooded and 3 in. or less in diameter) and Primulinus Grandiflorus (florets hooded and over 3 in. in diameter).

A good spike for exhibition should be straight and of good length and have at least five florets open. The florets should be well balanced—that is equal in size, well spaced, and all facing to the front—and they should be of good colour and freshness. Take particular care to see that the bottom flowers are not fading.

HARDT PERENNIALS

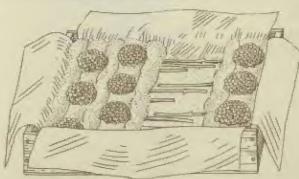
These cover a very wide range, but note whether the show schedule calls for "hardy herbaceous perennials" or "hardy perennials". Herbaceous perennials have non-woody stems which die down to the ground each year, but their root stocks promote new growth annually and

remain alive for several years. For horticultural show purposes the phrase "root stock" includes all bulbs, corms and tubers.

PANSIES AND VIOLAS

A good way of exhibiting these flowers is to fill a suitable bowl almost to the top with sand, which should be made thoroughly wet and then drained off





DAHLIAS
Strip off most of the leaves and pack the neck of the vase with clean moss to hold the blooms securely. For transporting, lay the blooms carefully on a bed of cotton wool in a box lined with tissue paper (left), and separate the heads with rolled-up cotton wool

until reasonably firm, Insert the stalks in the sand so that the flowers all face one way. Alternatively, special short glass tubes, like test tubes, may be used; these are filled with water and then inserted into the sand to hold the flowers.

Show requirements for both pansies and violas are similar; the flowers should be nearly circular and as large as possible without being coarse, with velvety petals of good substance lying flat over each other. The eye of each bloom should be clear and bright and, in pansies, the blotch should be dense and cover the whole of the lower three petals except for a narrow outer margin. Reject flowers with insect of weather damage.



PANSIES Place each stalk in a test tube full of water, and insert the tubes in a bowl containing firm sand decorated with leaver



ROSES

These are an important feature of both summer and autumn shows, and schedules are designed to cater for the first crop in June and for the second crop in September.

Roses are usually exhibited as specimenablooms or as decorative vases or bowls. Specimen blooms should be of the highest possible quality, but the decorative effect is more important than quality in the other classes.



SWEET PRAS

Exhibition sweet peas should have freshness and trueness of colour to the variety; blooms should be perfectly and regularly placed on the stems, which should be long and straight, with size of bloom in proportion; top blooms should be well open and bottom blooms still in perfect condition, with erect standards and rigid wing petals.

Staging is most important. The best method is to pack the vase tightly with reeds and trim them off flush with the top of the vase with an old razor blade. When the ends of the sweet peas are inserted in the tight pack, the stems will stand properly.



ROSES
Roses should not be cut until the day
before the exhibition. Small exhibits look
effective in a bowl fitted with a wire-

mesh support



SWEET PEA BLOOMS
The blooms on the left are regularly
spaced and are suitable for exhibiting;
the right-hand blooms are badly spaced



Children's Gardens

There are many plants for indoor and outdoor cultivation that produce results in a remarkably short time. These make an ideal basis for a children's garden, which should be full of incident. With guidance, children can derive endless amusement from a plot of land which is set apart for their own use.

MAKING A GARDEN

Where there is space for a children's garden out-of-doors, the job of actually preparing the ground will come in the spring. First comes the fun of planning 1074 and laying out. During the winter, when the ground is unworkable it is an absorbing task to draw a plan of the garden. The position of flower beds, lawns, paths and rocks, can be marked in different colours. Find out which plants like shade and which like sun, and plan the position of the beds accordingly. A rock garden, for instance, should always be in a sheltered but bright corner.

A children's garden need not be simply a flower or vegetable bed, though many young gardeners take a pride in just such a well-dug, weedless plot of their own.



A MINIATURE LANDSCAPE GARDEN
A hill of sand and a piece of undulating turf make
the contours. The road is of fine gravel, and the
stone rain is constructed of broken building
stones, Burning bushes and various wild flowers
are glanted in the grass

A LANDSCAPE GARDEN

The site can be laid out as a landscape in miniature. The ground can be heaped up to form mountains and hills, and small trees can be planted in clumps to look like forests. A pile of two or three old grey stones or moss-covered bricks will make a convincing ruined castle, and the roads and paths can be made of fine gravel.

A FOND GARDEN

A pond garden, which is quite simple to construct, makes a fascinating play-area for children; but do not provide an area or depth of water into which a small child might fall and drown. For details of construction see The Water Guiden. The pond could be cement-lined and have one or more islands with caves, cliffs and

secret pirate harbours, made by heaping stones in the pond. Plant water weeds that will grow quickly; the pond could also be stocked with fish. Plant dwarf trees round the edge, and make a rock garden with the soil that was dug out when making the pond.

A MAT GARDEN

An alternative design for a children's garden might be a relief map of the British Isles or some other country. Mark mountain ranges with stones and forests with miniature trees. Dig ditches for the larger rivers, line them with cement, and fill them with water. If the map is large enough, the different counties could be planted with different-coloured flowers, particularly such low varieties as Virginia stock (Makomia maritims).

A ROSE GARDEN

It is quite easy to make a tiny, formal rose garden. Make lawns from moss, or from some of the dwarf fescue grasses usually found in an old lawn. The miniature lawns can be "mown" with nail scissors. Many miniature rose bushes are quite inexpensive, and none grows taller than I ft. high. Roulettil, the smallest, is seldom more than 6 in. high. These dwarf roses come in pots, so that they can be put into the ground at any time of year. Treat them like hybrid tea roses, and prune them with nail scissors.

PLANTS FOR THE CHILDREN'S GARDEN

TIME-OF-DAY PLANTS

These are among the most interesting plants to grow, for if a number of different ones are planted, it is possible to tell the time according to which flower is open.

It is necessary to get up very early, at about four o'clock, to see the large blue flowers of morning glory (Ipometa) unfurl.

At about midday, the flowers start to

close slowly again. Ipomoea is a hardy annual that flowers all summer and will quickly twine its way up a string; it should be sown in April.

Californian poppy (Eschscholzia) starts to open at about nine in the morning, and the flowers do not close until about five in the evening. This is a hardy annual that will grow in any ordinary soil. Sow seed in the spring, and it will produce brilliant red or orange flowers during the summer.

The pasque flower (Pulsatilla sulgaris) and Comobulus tricolor open a little later than eschecholzia, at about ten or eleven o'clock, but usually close at about the same time, though the convolvulus may remain open on moonlit nights. Both are easy to grow and should be planted in the spring. The purple pasque flower, a perennial, blooms in April, and Convolvulus tricolor, which is an annual, from July to September.

Neither honeysuckle (Lonicera) nor the evening primrose (Oenothera biennis) open fully until six or seven o'clock in the evening. The scent of the honeysuckle is strongest at this time too, in order to attract the long-tongued moths and ensure pollination. The evening primrose, though yellow, is quite unlike the small primroses seen in the spring, It is one of the most spectacular time-of-day plants, for the flowers burst open very quickly, and at dusk it is possible to watch them opening at the rate of eight or ten a minute. Both plants are easy to grow, and flower all summer. Most evening primroses are biennials, and should be sown in July; honeysuckle is a perennial shrub and can be trained to climb up a wall, trellis or pole.

Several other plants, though not strictly time-of-day plants, react to different conditions in interesting ways. Daisies, thistles and mesembryanthemums, for instance, open in sunlight, but close up in damp weather or rain to protect their pollen.

WRITING WITH PLANTS

It is very easy to write a name in flowers, and in this way individual plots can be clearly labelled. Trace the child's name in large letters in the soll, and sprinkle the letters with seeds of Virginia stock (Malcomia maritima) or some other small plant. If Virginia stock, an annual, is sown at intervals from the autumn onward, it will produce flowers in a variety of colours from the following spring right through to the autumn.

Mustard and cress grown in the same way will produce a very neat, bushy name, and have the added advantage that they can later be cut for eating. Sow the seed thickly at intervals throughout the summer; mustard germinates more quickly than cress, so it should be sown three or four days later. Do not cover the seeds with soil, but simply press them gently into the ground with a flat board. The seedlings should be ready for cutting in less than a formight.

It is also most exciting to watch a name increase in size with the plant. This is done by cutting the name into the skin of a small marrow-as the marrow grows, the inscription grows with it. Marrows can also be decorated by attaching a cardboard stencil to the young marrow with a fairly loose rubber band, to allow for growth. By the time the marrow is ripe it will be green, except for the part covered by the stencil, which remains white. In this way quite an intricate design can be imprinted on a marrow. Marrows should be sown in rich soil in April or May, and cut while they are still young and tender.

AMUSING AND UNUSUAL PLANTS

There are plenty of unusual plants that are easy to grow, and which will afford endless amusement to a child.

A loofah is particularly unusual, and useful as well, for in less than a year one plant will provide several small loofahs for the bath.

In April, sow the large black seed of a loofah (Isifa) in a pot full of good garden soil. Keep the pot on a sunny window-sill, and by about the end of May, a small, marrow-like plant should have appeared. Plant this out in the garden, and in the autumn the small loofahs, looking just like marrows, will be ready to pick. Put them back on the window-sill to dry out; then peel off the skin to reveal the loofahs inside.

Gourds are also fun to grow and make an attractive form of decoration for the house during the winter. After picking, let them dry a little, then varnish the coloured varieties so that they retain their colour and have a good shine; the white varieties can be painted. Grow gourds from seed in exactly the same way as loofahs.

Many children's games require coloured counters, but these need not be bought. Simply plant beans that have seeds of different colours. For instance, the runner bean Streamline has scarlet seeds, and Masterpiece is one of several broad beans with green seeds. Dwarf beans such as Canadian Wonder (purple), Granda (white), Brown Dutch (brown), Phoenix Claudia (rose-pink) and Golden Butter (black with a white spot), will also provide plenty of coloured seeds to use as counters.

All these varieties are easy to grow and should be sown in late April or during May; two or three further sowings at intervals of a fortnight will ensure a succession of beans for picking during the late summer.

The seeds are also useful for filling small bags for use in place of a ball.

There are some varieties of bush tomato that produce unusual yellow



fruit, and others that produce the delicious miniature cherry or currant tomatoes. Bush tomatoes seldom grow more than I ft. high and require no staking or punching out of the side shoots. Plant out in May in a sheltered, sunny position, and the fruit can be picked at the beginning of September. An attractive and interesting plant for a children's garden is the burning bush (Kochta resparia trichophila). It looks like a miniature pine tree, with masses of narrow leaves, and earns its English name by turning a deep fiery-red in late summer. Kochia is a half-hardy annual, and should be sown in April or May.

The rose, Masquerade, is another plant that lives up to its evocative name, for its flowers are yellow when they open, deepening in colour to salmon-pink and finally to a rich crimson as they mature. The bush is often covered with clusters of different-coloured blooms at the same time, and is a good illustration of the use of varietal or cultivar names, for Masquerade describes vividly the gav carnival appearance of this particular rose. A floribunda variety that grows to a height of about 4 ft., Masquerade may be planted at any time from late October to late March when the ground is free from frost and reasonably dry.

If a conservatory is available, or a small corner of the greenhouse, children will enjoy the sensitive plant, Minosa pudica. At the slightest touch the leaves will droop, and the small secondary leaves will quickly close tightly in pairs. If the plant is given an interval to recover, this treatment can be repeated. This mimosa is usually treated as an annual. Sow three seeds in a pot in April or May, keep the pot in a sunny position, and water it well. With careful treatment the plant will live right through the following winter.

Another plant that will amuse children is the mouse-tail plant (Arisana probactideum). Projecting from arum-like foliage, the base of the green and brown flower-bract looks remarkably like the hindquarters of a mouse, tapering to a curving "tail" about 5 in. long. Plant this hardy perennial in a moist, shady position in early autumn, and it will flower early the following summer.

QUICK RETURN PLANTS

Nobody wants to wait a very long time for plants to grow, least of all children, and there are many plants that produce results in quite a short time.

Annuals are among the most satisfactory quick return plants, for they are easy to grow, and if sown in April, will provide a bright display of flowers right through the summer. Some annuals have already been mentioned, but the following are also excellent subjects for a children's garden.

Candytuft (Beris amara) has wellscented flowers in a variety of bright colours from early summer onward.

Clarkia produces a succession of showy flowers from July to October. They are pink, lilac or purple, and are excellent for picking, for they last well in water.

Cornflowers (Centaurea cyanus) are always popular for their bright flowers, which are usually white or blue and appear in July,

Jumping Jack (Impatient raylet) is an amusing plant, for the ripe seed pods wriggle and curl if held gently between the fingers. If left alone, the pods eventually explode, making a considerable noise, and scatter their seeds in every direction. This plant is a type of balsam, with purple flowers in August. It will grow as tall as 5 to 8 ft. and likes a shady position.

Love-in-a-mist (Nigella damascena) has large blue flowers from July to September. The seed heads that follow look like tiny balloons, and it is fun to paint them gold or silver and use them for Christmas decorations.

Mignonette (Reseda ederata) has a delightful scent and spikes of yellowish flowers that last from June till October.

Nasturtiums (Tropocolum majus) are always colourful, and the Gleam Hybrids range in colour from deep mahogany to pale orange-pink. Nasturtiums flower all summer, and the poorer the soil, the happier they are. It is especially exciting to watch the climbing varieties grow.

Scabious (Scabiosa) has flowers that look like pin-cushions. The annual scabious are usually blue and are useful for cutting, for they continue to bloom from luly to September.

Sunflowers (Helianthus annuas) are most exciting plants, for they may grow as tall as 10 ft.; they make a good background for a garden. The yellow flowers, which have round, dark brown centres, are as big as plates, and look almost like human faces from a distance. Plant sunflowers in a sunny position and they will grow very fast, flowering from July to September. Save the flower-heads, for chickens love to peck out the seeds.

Sweet sultan (Centaurea moschata) belongs to the same family as the cornflower, and has fluffy flowers of white, yellow or purple from June to September. It has a spicy scent, and may owe its English name to the fact that it was brought from the Near East, much of which was then under the rule of the Ottoman sultans, in the 17th century.

Tree mallow (Lawtera trimestris) has huge rose-pink flowers in June, which continue to appear until the autumn. Find a sunny corner for this tall, hardy plant.

It is quite amusing to mix up any annual seeds that may be left over after planting, add some sand, and scatter the mixture thinly over a spare corner of the garden. An exciting assortment of flowers will soon appear, and the children can have a competition to see who can name the greatest number of kinds.

Some vegetables also produce results in a remarkably short time. As well as mustard and cress, it is possible to have a succession of lettuces and radishes throughout the summer if the seeds are sown at intervals of about a fortnight from March or April onward. Varieties of lettuce that are particularly recommended for a children's garden are the small, crisp Tom Thumb; the larger Webb's Wonderful; and the very hardy Continuity, which has brown-tinged leaves and a delicious nutty flavour. Early potatoes also grow quickly, but occupy a lot of space. If planted towards the end of March, they will be ready to harvest early in June, by which time it is too late to put in other plants. So do not choose potatoes unless there is a spare corner of the garden that can be entirely devoted to this crop.

TREES FOR THE CHILDREN'S GARDEN

Although growing a tree is regarded by most adult gardeners as a long-term project, a child can derive much amusement and interest from planting one or two trees that grow fairly quickly.

PLANT A SAPLING

It is most exciting to plant a sapling and keep a record of its development. Make a note of the date on which the sapling was planted, and take a photograph of a child standing next to it; by taking further photographs each year on the tree's "birthday", it is possible to keep an interesting record of the comparative rates of growth. Or the sapling could be planted to commemorate a birthday or some other special event which occurs during planting time. Provided the ground is not frosted or very wet, the young tree can safely be put in at any time from October to March.

Put the name of the tree and any other interesting details on a label, and nail it to a post stuck in the ground near the foot of the tree, as is done in public parks. One of the best trees to plant is Cheal's weeping cherry (Prusus serulata tosea), for it grows quite quickly, and being a weeping variety does not occupy much space.

A FEACH TREE FROM A STONE

Plant a peach stone about 2 in, deep in a corner of the garden where the soil is well cultivated, and a small tree will soon start to grow. In order to produce fruit, however, the stone must have come from an English peach such as Peregrine; even so, the tree may grow for ten years before producing peaches.

OTHER TREES FROM SEED

A horse chestnut tree can be grown from a conker buried 2 in, deep in the garden. To restrict the size of the tree, plant the conker in a large flower pot or an old bucket with holes in the bottom, and bury the pot or bucket in the ground.

An oak tree can be grown from an accorn in the same way. And if one "wing" is detached from a sycamore seed and the remainder is planted in the garden, with the seed-vessel downward, a young sycamore tree will soon appear.

MINIATURE GARDENS

If space is limited, it is still possible for a child to cultivate a miniature garden, in the form of a sink garden or a window-box placed on a ground floor window-ledge. Even an old biscuit tin can become the basis for a garden if a few holes are punched in the bottom for drainage, and it is painted a gay colour—though it should not be so bright as to detract from the beauty of the flowers. Sink gardens and window-boxes are discussed in detail in Town Gardens, but the table on page 123 lists the easiest plants for a child to grow in a sink garden.

Very easy plants for a window-box include snapdragons (see antirrhinums in Annuals), and dwarf wallflowers (Cheiranthus cheiri Tom Thumb), which should be planted in the autumn to flower the following spring. Pansies take rather longer to grow, being blennials, but they are well worth waiting for. Sow the seed in June or July, and when the

seedlings are about 1 in. high, thin shem out to 6 in. apart. The pansies will then produce a mass of flowers in a variety of colours right through the following summer. French marigolds (Tagetes patala), alyssums, stocks (Mathiela) and petunias will provide a bright display of colour all summer. All are annuals, to be planted in the spring. Perennials for a window-box could include violas and salvias, both of which should be planted in the early autumn.

INDOOR GARDENING

MINIATURE GARDENS

Miniature gardens can also be an absorbing occupation indoors; they can even be made without any plants.

Find a bowl 2 or 3 in. deep and half fill it with ashes or sandy gravel. Finish filling with a mixture of leaf mould, sand and stone chippings. Then make or buy some tiny Japanese houses, temples and figures and arrange them in a miniature landscape. Make lakes of looking-glass, or fill a small tin lid with water, after first painting the lid to give the water a realistic colour. Roads and paths, mountains, walls and bridges, can be made of fine gravel and small stones.

The spaces in the miniature garden can now be filled with berries, twigs, leaves and flowers stuck in the sand, or live plants can be not in. The first alternative will amuse the child who likes to rearrange his garden frequently and does not want to wait for plants to grow. In the second case, dig up some mosses and small grasses and ferns from the garden, and plant them in the miniature garden. Be sure to keep them most, and in a fairly shady position. On the other hand, if the miniature garden is kept fairly dry on a sunny window-sill, try growing Imogridium ocaule, which makes a carpet of pretty mauve flowers less than 2 in, high during the summer and winter. Alyssum

DEF. A TAX	THE REST OF	N 787 8 28 27	(2) 年 (4) 丁 (3) 乙	CARDE	B.F.

Plant	Hright	Foliage	flewers	Time of Desering
Andressee villess oraclmeides	1 (n.	ulky rosettes	white, honey- scented	May to June
Armeria caespitma (Spanish thrift)	I in.	grass-like blue-green	pink	May
Сатриний гоззії	up to z in.	green	lavender- blue	August
Dianthur alpinur	3 tm.	grey-green	pink	July to September
Narcissus cyclamineus	3 lm.	grass-like	yellow	March
N. triandrus (angel's tears)	5 in.	grass-like	yellow	March
Primila Mrs. J. H. Wilson) In-	green	lilac	April
Scalain rapestre	5 to 8 in.	evergreen	yellow	Tune
Sempervirum (houseleek)	2 to 4 its.	resette of desity leaves in green, red, purple	Insignifi- cant; grown for foliage	

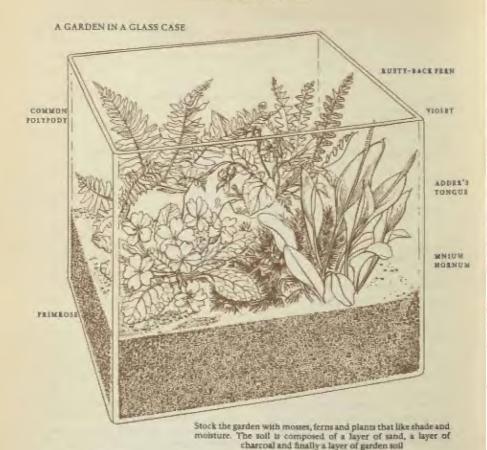
minimum Snow Carpet, with pure white flowers less than 4 in, high, and Calandrinia umbellata, which is about 4 in tall and has bright crimson flowers, would also mix in well. Make sure that the soil on the surface of the garden is fine and level. Sprinkle small pinches of seed on the surface and cover with a little more soil rubbed through a fine sieve. Press the soil firm with the fingers; keep it damp until the flowers have started to grow. Thereafter it will need very little water.

A GARDEN IN A GLASS CASE

A miniature garden enclosed by glass is usually called a terrarium; this type of garden can also be made in a bottle, but considerable skill is needed to insert the plants through the narrow neck of the bottle (see Indoor Gardening). A child will do best to use an old aquarium as a container for the garden. Put a layer of sand 1 in. deep at the bottom of the tank, followed by a thin layer of charcoal and a layer of good, dark, garden soil.

Stock the garden with plants that like shade and moisture, such as the tiny mosses, ferns and other small plants that can be found in most woods and deserted, overgrown gardens. Dig up plenty of soil with the plants, set them in the soil in the glass tank, and give them a fine sprinkling of water.

Cover the top of the tank with a piece of thick paper punched with a few holes to admit air, and keep the tank out of



direct sunlight. The garden will now virtually look after itself, producing its own moisture in the enclosed space, and needing very little watering.

AN INDOOR WATER GARDEN

An aquarium or a large glass bowl or jar can also be used to make an indoor water garden. A small water garden can even be made in a 2-lb, jam jar. Put a layer of sand 1 in, deep into the bowl, followed by 1 in, of garden soil and another layer of sand. Then fill the bowl with water and let it stand until the water is clear. Plants for the water garden can either be bought from a shop which sells aquaria or collected from a pond or stream, in which case be sure to dig up as much root as possible. Water milfoil (Mynophyllum), arrow-head (Sagitaria), and eelgrass (Vallisteria spiralis) are all suitable plants.

Push the roots through the top layer of sand into the soil, and then put a few stones round the stems to hold the plants down; otherwise they will float to the top of the bowl.

The sandy floor of the garden can be

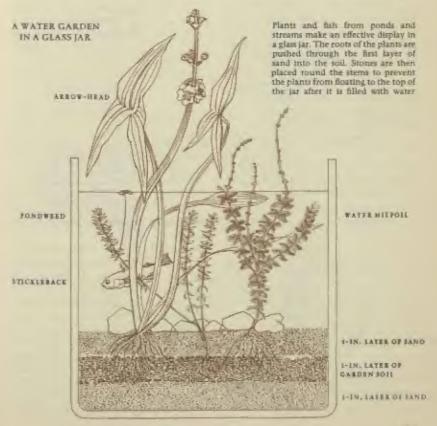
decorated with shells and attractive pebbles. If fish are to be included, walt until the plants are well rooted. Even a 2-lb. jam jar will hold one or two minnows. Do not overfeed the fish, or the water will quickly become unpleasant; a few baby water snails will help to keep it free from scum.

Keep the garden away from direct sunlight, and top up the water occasionally. Thin out the plants if they become too thick.

BULB5

Bulbs can be grown in the garden, but they will flower earlier if they are planted indoors. Hyacinths, tulips and daffodils are the flowers usually planted indoors, but smaller bulbs such as crocuses, grape hyacinths, chionodoxas and scillas are just as interesting to grow, and cheaper to buy.

Bulbs are usually planted in damp fibre, but this means leaving them in the dark for several weeks. A child will find it more exciting to watch a bulb grow in a jar. Special bulb vases can be bought, but a glass tumbler, jam jar or milk bottle will do just as well. Fill the jar nearly to the top with pebbles, and add water to just below the surface of the pebbles. Place

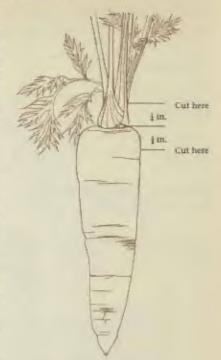


the bulb on the pebbles, pointed end uppermost, and make sure that the bulb itself is clear of the water. Stand the jar on a light window-sill, keep the pebbles watered, and the bulb will soon start to push roots down into the pebbles, and to send green shoots upward. Crocuses or other small bulbs can be grown in clumps in a bowl by planting several bulbs in the same way.

PLANTS FROM PEPS

It is most intriguing to see how quickly a fruit plp will produce a miniature tree. Plant the pip of an orange, lemon, grape-fruit or pomegranate \(\frac{1}{2}\) in. deep in a pot full of good garden soil, and keep the pot warm and dark, for example in an airing cupboard, until the first shoot appears. Then put it on a sunny window-sill. Water the small plant well, and transplant it into a larger pot when it has grown two pairs of leaves. Plants grown from pips indoors will never become large enough to bear fruit, but they make most attractive plants for the house.

A date stone grown in the same way will produce a beautiful leafy plant that looks rather like an aspidistra. The stone needs to be planted rather more deeply than the pips described above, and the



A ROOT-TOP GARDEN
When the carrots have been cut in
the way shown above, the crowns
are placed, leaf stumps uppermost,
in a soucer filled with water and left
on a sunny window-sill to sprout



soil should be watered as soon as it starts to look dry.

It is also possible to grow a plant from an avocado stone (the seed). Put some newspaper in the bottom of a jam jar, fill the jar with water, and balance the stone of an avocado in the neck of the jar so that the larger end of the stone just touches the water.

Leave the jar in the airing cupboard for three or four weeks and bring it into the daylight when the first shoot appears. Roots will have grown down into the water by now, and the avocado should be planted in John Innes potting compost in a + or 5-in, pot. It may be necessary to break the jam jar to remove the plant for potting up, because the seed will most probably fill the neck of the jar.

A ROOT-TOP GARDEN

It is quite easy to make a pretty and unusual garden by growing the tops of root vegetables. A carrot top, for Instance, will produce a mass of beautiful fern-like leaves within a few days. Cut the top off a carrot, leaving ‡ in. of the root and ‡ in. of leaf stem. Stand the carrot, leaf stump uppermost, in a saucer of water, and leave it on a sunny window-sill. Keep the saucer filled with water, and the carrot will sprout very quickly.

Other root vegetables can be treated in much the same way, and if, for instance, the tops of a beetroot, a turnip and a parsnip are grown together, the garden will be an attractive mixture of different coloured leaves. Put a layer of clean pebbles at the bottom of a shallow bowl or soup plate, stand the root tops on the pebbles, and wedge them in with another layer of pebbles. Half fill the bowl with water and put it on a sunny window-sill, adding more water when necessary.

A pineapple top will also sprout quite quickly. Choose a fresh pineapple top with a good solid growing top, allow it to dry for a few days, and then plant it in a bowl of garden soil mixed with sand. Keep it in a warm place, and do not give it too much water.

MUSTARD AND CRESS

Perhaps the favourite form of indoor gardening for a child is growing mustard and cress. Just sprinkle the seed on a piece of damp flannel or blotting paper, remembering that mustard germinates more quickly than cress, and should therefore be sown three or four days later. Keep the flannel damp, and before long there will be plenty of delicious mustard and cress for sandwiches.

The cresshog is even more amusing. Buy one of the specially made clay models of a hedgehog or some other animal (it must be made of clay to retain moisture), and soak it in water for five minutes or more. Soak the cress seeds too, and spread them evenly over the cresshog's back with a finger or a knife. Fill the cresshog with water, cover it with an empty tin, and stand it on a plate in a warm place. Top up the water in the cresshog every day, and sprinkle it with water too.

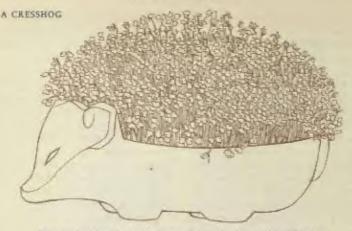
When the cress is about \(\frac{1}{2} \) in, long, remove the tin and stand the cresshog on a light window-sill. It will still need daily watering, and should be protected from direct sunlight and excessive heat. The cresshog's "spines" will soon turn green and be ready for cutting.

PLANTS AS PRESENTS

Plants make excellent presents, for they are both fun to grow and inexpensive to buy. Few things will give more pleasure to a relative or friend than a present of flowers that a child has taken the trouble to grow himself.

CHRISTMAS

Bulbs grown in an attractive bowl are always welcome as Christmas presents. It is possible to buy hyacinths and other



Cress can be grown in one of the specially made clay models of a hedgehog or other animal. The seed is spread evenly over the hedgehog's back and the cresshog filled with water

bulbs that are specially prepared to flower at this time. Plant them in damp fibre in late September, and keep them in a cool, dark place for about ten weeks, watering occasionally to keep the fibre just moist. By the beginning of December the bulbs should have produced strong shoots. Bring the plants into the daylight and gradually give more heat until they are used to normal room temperature.

BURTHDAYS

Bulbs can also be grown for anyone who has a birthday in early spring. For summer birthdays, plan to have some annuals in flower and make up a bunch of as many varieties and colours as possible.

MOTHER'S DAY

Daffodils are a beautiful present for Mother's Day. Although the date of this festival changes from year to year, being the fourth Sunday in Lent, it always falls at a time when daffodils are in bloom. Plant the daffodil bulbs in a sheltered, fairly shady corner of the garden in late summer or autumn, and by early spring there should be a fine display of yellow flowers, which will last until April.

LAVENDER BAGS

These make good presents, for the wonderful scent will linger for months. Cut the lavender at the beginning of July, before the flowers are fully open, tie the stems together, and hang them to dry in the airing cupboard for a few days. Meanwhile, make some small bags of fine muslin or nylon. Then rub the flowers from the dried lavender and fill the bags. Wear a handkerchief over the nose like a mask when rubbing the flowers, as the dust that rises from them can be most irritating. Tie the bags tightly with a gaily coloured ribbon.

Lavender is usually grown from small bushes that can be bought from nurseries. The bushes should be planted in September or March.

PROPAGATING PLANTS AND KEEPING RECORDS

PLANT COLLECTING

Plant collecting can become a fascinating hobby, and one in which the whole family can participate. On holidays, and during walks in the country, look out for new or unusual plants, and keep a diary or notebook in which to record them. Plants can be exchanged with friends sometimes, too, for few gardens contain exactly the same flowers.

PROPAGATION

Another way of collecting plants is to propagate those already grown. Perhaps the simplest form of propagation for a child is to make a collection of seeds from the garden, which will produce new flowers the following year. Gather the seed from plants when they have finished flowering, and put each variety into a different envelope, carefully labelled and dated. Some seeds, such as those of lupins, delphiniums, pinks, poppies and forget-me-nots, can be gathered one day and sown the next. Most seed, however, should be kept and sown the following spring.

Even some shrubs can easily be grown from seed. Sow a seed of broom (Cytisus scoparius), for instance, and within two years the bush may be as tall as 4½ ft., with lovely yellow flowers in early summer.

Plants are also propagated from cuttings, geraniums being perhaps the easiest subject for a child. Using a sharp knife, cut a side shoot from the stem of a healthy plant, preferably during the summer. Strip the shoot of its lower leaves and insert it into a bed of fine soil in a sheltered part of the garden. The cutting will soon make roots, and should then be transplanted into the more nourishing soil of its permanent bed. Stem cuttings taken from rosemary, lavender and willow are easily rooted in the same way.

Another important method of increasing plants is by division, which simply means that the root system of the plant is carefully split into two or more pieces and the separate parts replanted. This is usually done in the spring, when the plants are growing strongly. Bulbs are easily divided, and tulips, especially, increase very quickly; in two years one bulb may increase to as many as twenty or thirty. Plants with fibrous roots, such as Michaelmas daisies (Aster), are even simpler to divide.

A GARDENING DIARY

The best way to record the work done in the garden is to keep a diary. This will soon become something of a Nature calendar too, for the date of the first daffodil, the first cuckoo-call, a late frost, and other events, will vary from year to year.

It is most exciting to discover that one summer it was possible to pick the first beans two whole weeks earlier than the previous year. And if, for example, the diary contains a note of the fact that when the annuals were in flower last summer there was too much red in the border and not enough yellow, then this will act as a reminder to sow some different varieties this spring. Make a note, too, of any new ideas, or interesting plants seen when visiting other gardens, so that they can be tried out at home the following year.



pornegranate trees; a spiced wine warmade from their juicy fruits

Plants of the Bible

THE Lord God planted a garden eastwardin Eden... And a river went out of Eden to water the garden ... And the Lord God took the man, and put him into the garden of Eden to dress it and to keep it." Thus the first garden and the first gardener are described in Genesis 2, 4, 10, 15.

The Old Testament provides a good picture of the methods of cultivation and the plants grown in Biblical times.

Flower gardens were then a luxury and only for the wealthy: most people grew plants for strictly utilitarian purposes.

All the gardens of the Bible are set against the harsh and arid conditions of the Middle East; the need for water is constantly referred to, as is also the need for careful dressing, or tending, to preserve the gardens against the ever encroaching wilderness of thorns, nettles and brambles (Isaiah 34, 13). "Doth the

ploughman plow all day to sow? doth he open and break the clods of his ground?" (Isaiah 28, 24) is one of the many references made to ploughing. It appears that harrowing was common in the days of David (2 Samuel 12, 31 and Job 39, 10), and that the composting of vegetable waste was also practised (Isaiah 25, 10).

Then, as now, there were many pests to contend with. Among them were beetles, grasshoppers and locusts (Leviticus 11, 22), flies (Psalm 78, 45), hornets (Deuteronomy 7, 20) and snails (Leviticus 11, 30), as well as mildews and caterpillars (2 Chronicles 6, 28),

The magnificence of royal gardens is described in the first chapter of Esther. They were probably laid out like court-yards with pavements of red, blue and white marble. The beds are described as gold and silver—doubtless they were planted with herbaceous plants that had silver—and golden-coloured flowers.

In the days of the Bible it seems that most plants were fragrant and even the flowers of the vine had exquisite scent. Solomon planted vineyards, gardens and orchards and constructed pools to water them (Ecclesiastes 2, 4-6) and, although his gardens have long since vanished, the Song of Solomon 4, 12-15 recalls their beauty: "A garden inclosed is my sister, my spouse; a spring shut up, a fountain sealed. Thy plants are an orchard of pomegranates, with pleasant fruits; camphire, with spikenard, spikenard and saffron; calamus and cinnamon, with all trees of frankincense; myrrh and aloes, with all the chief spices: A fountain of gardens, a well of living waters, and streams from Lebanon."

Trees, vegetables and spices are mentioned more frequently in the Bible than flowering plants.

Trees, which provide both shade and blossom and eventually fruit, were the outstanding feature of Bible gardens, and 30 different kinds are referred to. The translators of the Bible were theologians and not botanists, so that a number of plants were wrongly named in translation. The tree of knowledge in Genesis 2. 17, which is usually depicted as an apple tree, was probably an orange tree. The word "apricot" has also often been wrongly translated as apple, for true apples were of a poor quality in ancient



Christ spent His last night in the Garden of Gethsemane—"the garden with the olive press"

Palestine and they cannot therefore have been the "apples of gold" referred to in Proverbs 25. II, nor sweet to the taste as those in the Song of Solomon 2.3.

The olive tree appears for the first time in Genesis 8. 11, and is mentioned over 50 times more. Its long, grey-green leaves provided shade; its unripe, green fruits were eaten with bread; and the ripe fruits

were crushed to extract the oil which was used for cooking, soap and lamp fuel.

Christ spent His last night of freedom in the Garden of Gethsemane—"the garden with the olive press".

Figs were grown in the earliest days and in Genesis 3. 7 Adam and Eve "sewed fig leaves together" to cover their nakedness. The species of palm tree that bear fruits were also popular. Dates, like figs, were eaten either fresh or dried, the sap



The ointment made from this fragrant plant was one of the most precious perfumes in Biblical times

of the date palm was used as a drink and the strong leaves were used for weaving into mats. In St. John 12, 13, the crowd that greeted Jesus for the Passover cut down palm fronds and strewed them in His way, crying "Hosanna". Another tree grown in large quantities was the pomegranate. Its juicy fruits made not only a refreshing drink but also a spiced wine—"I would cause thee to drink of spiced wine of the Juice of my pomegranate" (Song of Solomon 8, 2).

Almond trees are mentioned in Ecclesiastes 12, 5; and in the Song of Solomon 6.

11, Solomon speaks of his nut garden, which probably contained walnuts, hazelnuts, chestnuts and pistachio nuts. The "green bay tree" of Psalm 37, 35 is the shrub grown today whose dark green leaves are often used for flavouring. Cinnamon was obtained from the inner rind of the bark of the cinnamon tree, which has leathery, smooth leaves and yellowish-white flowers.

The locust tree, or carob, was also grown at that time—the husks that the prodigal son in St. Luke 15, 16 was hoping to eat were undoubtedly dried locust beans. The word husks means "little horns" and derives from the fact that when children were playing they held the dried reddish beans on either side of their foreheads to make themselves look like goats.

The oak is first mentioned in Genesis 35. 4 and again in 20 other places. Issiah 60. 13 refers to "the fir tree, the pine tree, and the box together", the box being of the same family as the wild box trees on Box Hill in Surrey.

The wood of some trees was used for building. Gopher wood was used by Noah to construct the ark, and fir was used to build rafters (Song of Solomon 1. 17), but sycamore was the favourite building material until Solomon chose the wood of the cedar of Lebanon for his temple: "And he built the walls of the house within with boards of cedar; both the floor of the house and the walls of the ceiling:" (I Kings 6, 15). The wood of the olive was used for the doors of the Temple (I Kings 6, 32).

Other trees were grown for the scents and oils they yielded. The frankincense tree, with its clear green leaves and attractive, star-shaped, pink flowers, came originally from the Himalayas and northern Arabia and produces the finest burning incense in the world. The gum resin of the myrch tree, found growing along the coasts of the Red Sea, was an ingredient of the holy anointing oil used in the Tabernacle and, with the resin of the aloe, of the salve for the purification of the dead (St. John 19, 39, 40). The resinous product of the balm or balsam tree contained great healing properties, and according to Josephus, the Jewish historian, was among the spices first brought to the Holy Land by the Queen of Sheba (I Kings 10, 10).

The vine, one of the most important plants mentioned in both the Old and the New Testaments, was cultivated from the earliest days, "And Noah began to be an husbandman, and he planted a vineyard" (Genesis 9.20). Instructions on vine growing are given in Ezekiel 17, stress being laid on the need for good irrigation. That some vineyards at least were closely guarded is apparent from the account in St. Matthew 21, 33 of a householder who built a vineyard and "hedged it round about, and digged a winepress in it, and built a tower"; and the respect in which the vine was held is made clear in St. John 15, I when Jesus said at the Last Supper: "I am the true vine, and my Father is the husbandman."

Many of the fruits and vegetables grown in Palestine were brought by the Jews from Egypt after their captivity. They were cultivated in considerable quantities in the Holy Land, where the gardens were laid out like chessboards so that water could run between the square beds of melons, leeks and cucumbers. The melons in Numbers 11.5 were probably the same kind of water melon that is grown in Israel today. They are cool and juicy and will grow in a dry soil, for their leaves absorb moisture from the heavy night dew that falls there. The gourd in Jonah

4. 6 is obviously a quick-growing climber: "And the Lord God prepared a gourd, and made it to come up over Jonah, that it might be a shadow over his head." Gourds are closely related to cucumbers, and a garden of cucumbers is referred to in Isalah 1. 8.

Although leeks are mentioned only once (Numbers 11, 5), they were probably the main vegetable. Onions are mentioned in the same verse and were highly



The fruits, called devil's apples, were thought to induce fertility

valued as thirst quenchers. Garlic was another of the plants the Jews missed when they left Egypt (Numbers 11.5). It is a close relation of the shallot and is still popular in Israel today. The bean in 2 Samuel 18. 28 and Ezekiel 4. 9 was probably the kidney bean, which could be dried or eaten fresh.

The mandrake, a member of the potato family, was also grown, and its fruits, which were called devil's apples, were thought to induce fertility. This is referred to in Genesis 30. 14, 17: "Then Rachel said to Leah, Give me, I pray thee, of thy son's mandrakes... And God hearkened unto Leah, and she conceived, and bare Jacob the fifth son."

The Jews knew how to make the best of their land, and grew the red-seeded lentil on the rocky ground of the olive groves. This small pea-like plant was pulled up and threshed like wheat; its seeds were



CROCUSSATIVES
Saffron was prepared from the orangecoloured stigmas of this plant

used for the red pottage made by Jacob in Genesis 26, 34,

Most present-day cereals, such as wheat, barley and rye, were cultivated, and millet was also used in the making of bread (Ezekiel 4, 9).

The sugar cane, referred to in Jeremiah 6. 20, was treated as a great delicacy.

Numerous spices and herbs, in addition to the bay leaves and cinnamon already mentioned, were used to give flavour to food. Solomon refers to calamus, a sweet cane-like plant, and to saffron, a spice prepared from the bright orange-coloured stigmas of Crocus sativus. Fitches, a kind of ranunculus, which produce pungent black seeds used to flavour cakes. are mentioned in Ezekiel 4. 9, and a description of the coriander, which bears aromatic seeds and is an umbelliferous plant with leaves like parsley, is given in Exodus 16, 31. The lews were also familiar with mustard (St. Matthew 13, 31), and the plant named "desire" in Ecclesiastes 12, 3 was probably the caper, which flowers in May and whose buds are bottled in vinegar even today.

"Woe unto you, scribes and Pharisees, hypocrites! for ye pay tithe of mint and anise and cummin", says Jesus in St. Matthew 23. 23. Mint, one of the bitter herbs of the Paschal Feast, was grown not only for its young shoots but because its leaves could be dried and used in winter; anise, or dill as it is now known to have been, is a dainty annual plant whose juice was added to washes to cleanse wounds; and cummin (now spelt cumin) is a small plant whose seeds when crushed were mixed with bread, cake and meat.

But not all the spices were used in the kitchen. Spikenard, originally from Nepal and Tibet, was praised by Solomon for its fragrance (Song of Solomon 1. 12) and its ointment was one of the most precious perfumes. The small, oval leaves of the camphire, or henna flower, which looks rather like a privet and is also highly scented, are still used in many parts of the East to produce a dye to redden hair, hands and feet.

Rue, mentioned in St. Luke 11, 42, is a hardy evergreen shrub whose leaves give off a strong odour and are acrid to the taste. Four species are found in Israel. It was thought to possess powerful medicinal qualities and was frequently used in prescriptions. Wormwood is frequently

PLANTS OF THE BIBLE

mentioned in the Bible, although often metaphorically, as in Revelation 8, 11, This plant bears yellow flowers and is known for its extremely bitter taste. It was recognized as a valuable tonic and stimulant.

The plant hyssop is referred to eleven times, but it is difficult to discover what the plant really is. It may be the plant that the Arabs call "zatar" which has a scent like that of thyme, for this plant has long, slender stems which could have been made into a bunch to sprinkle the sacrificial blood as in Hebrews 9. 19. But Augustine said that hyssop was a short-stemmed rock plant whose roots would penetrate deeply into rocks, and this may be correct because "the hyssop that springeth out of the wall" is mentioned in I Kings 4. 33.

It is difficult when studying the flowers referred to in the Bible to be sure that the translators have really understood the original word—the word "flower" itself has been used in the Old Testament to express a number of Hebrew words. The lily is mentioned again and again. Probably the plant in The Song of Solomon 2. 2 is the madonna lily whose bulbs were eaten as a delicacy, but the lilies

in St. Matthew 6. 28 and St. Luke 12, 27 may have been anemones or merely beautiful wild flowers. There are differences of opinion about the translation of the word "rose", and while it is agreed that the roses in Isaiah 35, 1 were probably narcissi, the "rose of Sharon" in The Song of Solomon 2, 1 may have been either a narcissus or a tulip.

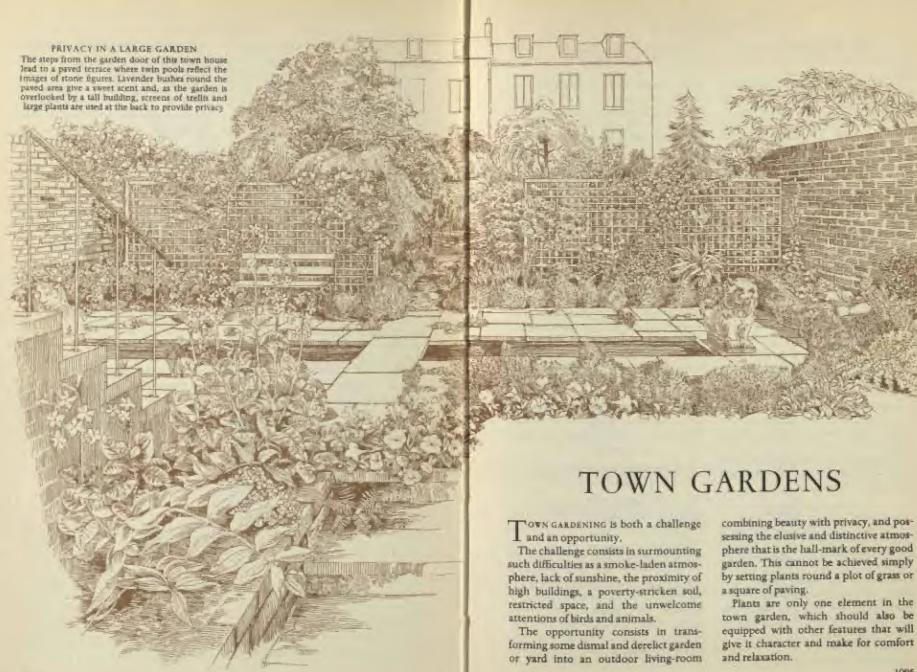
Confusion arises also over the plant called desire, which has already been mentioned, and over the onycha in Exodus 30. 34, which may have been the rock rose, for the Greek for fingernail is onycha and the petals of the rock rose have a fingernail marking on them.

Among the flower names that do not appear to have been mistranslated are Crocus satisus (saffron crocus) and the opium poppy: The juice, or gall, of this poppy was mingled with vinegar and offered to Jesus at Golgotha (St. Matthew 27, 34).

Many of the tulips and hyacinths grown in Great Britain today are descendants of the plants the Crusaders brought back from Palestine—the flowers seen by the Jewish spies when they penetrated into the Promised Land and reported it to be "a land flowing with milk and honey".



King Solomon built his temple from the wood of the cedar tree



PLANNING THE TOWN GARDEN

The town garden should not be regarded as an independent unit, but rather as an outdoor room, and it should therefore be designed in relation to the house that it adjoins. Keep the plan simple and practical, and do not introduce features for the sake of mere decoration, Generally speaking, the centre of the garden should remain uncluttered. If the area is enclosed by high walls, however, it is advisable to make the beds towards the centre, and to raise them about 11 ft. above the general level, so that they receive all available sunshine. The garden should always have a focal point of interest, perhaps in the centre area, or at the end of a vista

The first step in designing the garden is to measure the site and draw up a plan to scale. This provides an opportunity of visualizing different schemes and planning a definite procedure before clearing, digging and planting. Do not forget to consider the garden walls of the house, noting the position of any doors and windows, for these will have a bearing on the layout. Make a note, too, of any natural features on the site, such as trees, a group of bushes, or a difference in levels, all of which will offer scope for interesting treatment in planning.

PAVING OR GRASS

A town garden frequently consists of only a small area bounded by walls and heavily shaded. The most practical treatment is to transform it into a formal, paved courtyard, using either brick or stone. It is then permanent, easy and inexpensive to maintain, and always appears neat and tidy, with a clean surface that dries quickly after rain.

Although grass is desirable, it is seldom successful in a confined and shady space. Where the site is open, a small lawn is a feasible proposition, but plan it in conjunction with a paved terrace close to the house for sitting out. Make it from good turves rather than from grass seed, which is difficult to rear successfully in towns because sparrows will raid the seed and make dust baths in the soil. If seed is preferred, choose a mixture of Pou semovalis, \$23 rye-grass and creeping red fescue, which will withstand some shade and hard wear. The turf resulting from such a mixture should be mown regularly from a fairly early age.

For terraces and paths the best and most attractive material is York stone in rectangular self-faced slabs laid at random or in broken pieces as crazy paving. It is sometimes possible to buy from the local authority York stone lifted from street pavements. Also satisfactory, and less expensive, are rectangles of an artificial stone such as Pennine paving. Alternatively, bricks and tiles may be laid in attractive patterns—separately, together, or in combination with paving. The bricks should be hard and well burnt and laid in a bed of sand and mortar.

SOIL PREPARATION AND IMPROVEMENT

The success or failure of plants in a town garden depends upon the fertility of the soil, which involves its texture as well as its richness.

Depending on the condition, measures for improvement will range from partial resolling by importing fresh turfy loam to mix with the top-soil, to digging over the planting area in the autumn, making sure that the subsoil is broken up. Leave the surface rough, and apply a dressing of lime at the rate of 2 to 3 oz, per sq. yd., followed some six

weeks later by a dressing of manure. An application of soil conditioner will be beneficial if the ground is heavy and sticky; if it is wet, lay a few tile drains to facilitate drainage (see Dramage).

The best way of restoring fertility to sterile soil is to incorporate some humus material while digging. Ideally, this should be rotted stable or poultry manure, but more easily available materials in a town are leaf soil, spent hops, Pompost, crushed bark fibre or peat, supplemented by dressings of dried blood and bone meat.

GARDEN ORNAMENTS, POOLS AND OTHER FEATURES

Man-made features play an important part in giving character to a town garden, but a garden should be lived with for a while before any special features are installed; garden ornaments should always be used with discretion and their design and placing should be carefully considered. Arches, pergolas and shelters are usually impractical in a restricted space, but there may be room for a pillar or a well-sculpted figure at some strategic point; for a sundial or a bird-bath; for vases and urns, either as ornaments in themselves or to hold plants; and for a seat on the lawn or terrace, under a tree, or terminating a vista at the end of a path.

A bird-bath is a particularly pleasing ornament for a town garden, while vases look attractive placed on the coping of a terrace wall or formal pool, on the terrace itself, or on either side of a low flight of steps.

In a formally designed garden a small round, square or other geometric-shaped pool provides a focal point of great charm. A more natural layout, where the emphasis is on plants, provides greater scope in the shape and placing of a pool.

LIGHTING

Lighting of some sort is essential if the town garden is to be used as an outdoor living-room on summer evenings. As in the case of garden furniture, utility should never be sacrificed for appearance, but the two can very often be combined.

Have one or two lights shining down on the terrace, and carefully arrange a few more low down in the borders. Another could perhaps be placed in the branches or at the foot of a tree. If the right plants are chosen for illuminating, the result will be most effective. White and yellow flowers show up better than brightly coloured ones, and all grey-, silver-, and shiny-leaved shrubs light up to advantage, particularly if contrasted with neighbouring dark evergreens.

All the lights should be controlled from a switch by the garden door of the house, and the cables need not be buried deeply provided their position is known to those working in the beds and borders.

A competent electrician should be employed to install the lighting.

SCREENS AND HEDGES

One of the most important requirements for the town garden is privacy, and surrounding borders should therefore be designed to screen the view from both the inside and the outside, as well as to provide an attractive backdrop.

Woven board fencing, bamboo and lattice screening and trellis-work panels will do much to cover ugly walls or screen an unsightly view. Trellis work in a large mesh pattern of 9 by 12 in. or 12 by 15 in., and painted white, light blue or green, makes an attractive background and a good support for climbing plants, while trellis designed as a perspective screen makes the garden appear larger than it is.

If a tall, dense screen is wanted, and

BRIGHTENING A SMALL TERRACE

A small terrace can be given a warm and intimate character. Here, pots of brightly-coloured plants decorate the plain brick wall; the urn of flowen and the painted furniture can be rearranged to vary the site's appearance and to catch the sun. The trellis work fixed to the garden fence and covered with climbing plants such as Persian ivy will enclose the terrace and make it private



A BACK GARDEN WITH A POOL

In this garden a rectangular pool provides an interesting feature close to the house. The crazy paving immediately surrounding the pool relieves the severity of the regular paving stones and the stonework of the pool itself

> FLOWER CONTRASTS IN RAISED BEDS in constructing raised flower beds, the gardener can provide varying drainage and soil conditions, to sillow a variety of plants to be grown together in a small area

TOWN GARDENS



only a narrow border is available, erect a high, wide-meshed lattice or trellis, and clothe it with a large-leaved vine or some other climber, such as Clematis montana.

Plants should also play their part as screening if the background is not to become too austere. Place shrubs or, if space permits, medium-sized trees at strategic points.

Recommended hedging shrubs for a screen are yew, holly, tonicera nitida, Pyracantha regersiana and golden privet. For a lower hedge, use English and Dutch lavenders, rosemary, Berberis stenophylla and box, and include one or two floribunda roses such as Frensham if a flower-

ing hedge is wanted. All these shrubs are also useful as partitions if the site is large enough to be divided into several small separate enclosures.

Ideally, borders should be 5 to 6 ft. wide if shrubs are to be planted in a single row, or about 8 ft, if planted in a double row at staggered intervals. If groups of hardy herbaceous flowers, such as campanulas, paeonies, Michaelmas daisies, Pulsatilla sulgaris and bocconia are planted between the shrubs, a border 8 to 9 ft. wide is advisable. The taller the shrubs are to grow, the wider should be the border. Choose simple outlines, for restricted space and the proximity of fences and walls do not allow much freedom in border planning.

PLANTS FOR THE TOWN GARDEN

SOME DEPENDABLE HERBACEOUS PLANTS

The following will tolerate quite shady corners, and may be planted in groups, preferably in threes or fives between or in front of shrubs.

Acanthus Aconitum Ajuga Alchemilla Anemone Anthericum Aquilegia Aruncus Asperula Aster Astilbe Bergenia Campanula Centranthus Chelone Chrysanthemum Dicentra Doronicum

Euphorbia Geranium Hemerocallis Henchera Heucherella Hosta Iberis Iris Lupin Macleava Mertensia Oenothera Pacony Penstemon Phlox Physostegia Polemonium Polygonum Pulmonaria Rudbeckia Salvia Scrophularia

Echinops

Sedum Sidalcea Solidago Stachys Thalletrum Tradescantia Veronica

BULBS AND BEDDING PLANTS

All the more common spring-flowering bulbs will thrive for at least two or three years in a town garden; the less sophisticated kinds, such as bluebell, Spanish bluebell, Star of Bethlehem, crocus, snowdrop, winter aconite, fritillary, grape hyacinth and narcissus, including daffodils, will continue to flower for many years if planted at random in borders and rough grass. Some of the tulips, such as Tulipa kaufmanniana, T. finteriana, and T. praestans Fusilier will do well in any sunny corner, especially if left alone for a few years on top of a low retaining wall.

Later flowering bulbs that flourish in a town garden include such lilies as Lilium candidum, L. hansonii, L. henryi, L. regule, L. speciosum. L. bulbiferum creceum (syn. L. auruntiacum), L. hollandicum, and some of the new hybrids like Enchantment, Royal Gold and Golden Clarion. The summerflowering hyacinth, Gultonia candicum, is both easy and decorative in a border among shrubs.

Bedding plants such as wallflower, forget-me-not, double daisy, pansy, sweet William, polyanthus, primrose, are invaluable for providing colour in the spring. There will be few casualties if all these are planted out in very early spring.

The only special care needed for summer bedding plants is to be sure that they have plenty of water if planted during a dry spell. Small decorative and pompon dahlias withstand town conditions admirably, as do begonias, and such annuals as tagetes, calendula and nemesia.

In a town, many bedding plants, including such common ones as polyanthus, coleus, heliotrope, begonia and Bellin perennir (daisy), are best bought from a reliable nurseryman or horticultural sundriesman. Buy and plant in the spring, but beware of plants that are available too early, for this means that they have been forced and will be unable to withstand outdoor conditions. Do not plant too early either, for young plants will immediately succumb to late frosts.

FLOWERING SHRUBS AND EVERGREENS

Many shrubs described in Shrubs and Trees and other chapters in this book can adapt themselves to town conditions, and those listed below are particularly suitable. Sponge the leaves of evergreens like rhododendrons, camellias and sweet bay occasionally to remove soot and grime. For a description of the general care and cultivation of all shrubs, see Shrubs and Trees.

Arandinaria nitida (bamboo) Aucuba japonica (spotted laurel) Berberis Buddleig davidil Buxus sempervirens Camellia ignonica Cemethus Gloire de Versailles Chaenomeles (japonica) Cornus alba spoethii (dogwood) Cotoneaster Daphne mezereum Deutzia scabra Elaeagnus pungens aureo-variegata Eugnymus japamicus Fatshedera licei Fatsia japonica (castor oil tree) Forsythia Fuchsia magellanica Hebe Hydrangea macrophylla Hypericum culycinum (rose of Sharon) Hex aguifolium (holly) Kerria japonica (jew's mallow) Laurus nobilis (sweet bay)



ILLUSIONS WITH A MIRROR

To achieve an impression of spaciousness, a mirror has been fixed to the end wall of this small courtyard. Wing panels have mouldings that give a false perspective, and a wrought-from gate in front of the mirror adds realism to the scene

Lavandula (lavender)
Leycesteria formesa
Ligustrum (privet)
Mahomia aquifolium
Olearia haustii (New Zealand daisy)
Philadelphus (mock orange)
Prumus lauroceranus (common laurel)
P. hautanica (Portugal laurel)
Pyracantha (fire thorn)
Rhododendron hybrids
Rhus typhina laciniata (stag's horn sumach)
Ribes (flowering currant)

Rosmarinus (rosemary) Senecio laxifolian Skimmia Spiraea Syringa (lilac) Taxus (yew) Viburnum Weigela

In addition to these plants, the following shrubs are also particularly suitable for growing in town gardens:

Danae racemosa (Alexandrian laurel), evergreen, 3 to 4 ft., small yellow flowers and red fruit, Plant in autumn. Thrives in semi-shade and under trees.

Eriobotrya japonica (Ioquat), a bold and distinguished-looking evergreen, up to 20 ft. The glossy dark green leaves are corrugated, and about 1 ft. long and 4 to 5 in. wide. Fragrant yellowish flowers; rarely bears fruit in the British Isles. Plant in October or April. Prune in April. It needs a mild winter to do well.

Osmanthus ilicifolius (syrs. O. aquifolium), a useful evergreen, 10 to 12 ft., with hollylike leaves. Fragrant white flowers in September. Plant in October or April. Very slow growing.

Symphoricarpes (snowberry). Deciduous, up to 8 ft. Untidy in growth, but will often thrive where all else fails. Pink flowers in July are followed by berries in winter, which persist after the leaves have fallen. Plant from October to February.

S. albus laevigatus, has white berries. S. orbiculatus (coral berry), pink berries. S. chemitii, has rose-purple fruits and is a good plant for bees.

Yucca. A very striking evergreen to be used in strategic positions but only in large gardens. Tall, flowering spikes bearing creamy-white flowers in August rise from the rosette of sword-like leaves. Plant in October or April. Y. filamentosa (Adam's needle) has leaves about 21 ft. long and 1 to 2 in. wide; the flower spikes rise to 5 ft. Y. recurvifolis has narrower leaves, which are softer, and therefore curve back; the flower spikes are about 4 ft. tall.

PLANTS FOR WALLS AND FENCES showing favoured aspects

Aristolochia macrophylla, east. Buddleis alternifolia, south and west. B. davidii varieties, south and west. Camellia, north. Campsis radicans, south and west, Cemethes Autumnal Blue, south and west.

C. Delight, south and west.

C. Glotre de Versailles, south and west.

C. witchianus, south and west.

Chaenomeles Knaphill Scarlet, north and

C. lagenaria cardinalis (syn. C. umbilicata), north and east.

C. mivalis, north and east.

Chimonanthus praecex, east.

Clematis alpina, north.

C. montang, north.

C.m. rubens, north.

Clematis armandii, south and west.

C. flammula, south and west. C. macrepetals, south and west.

C. tangutica, and large-flowered hybrids, south and west.

Cotoneaster comubia, north and east.

C. horizontalis, north and east.

C. lacter, north and east.

Cytisus battandieri, south and west.

Eccremocarpus scaber, south and west. Euroymus radicans variegata, north and east.

Forsythia suspensa, north and east.

Garrya elliptica, north and east. Hedera canariensis variegata, north and east.

H. colchica demata aurea, north and east,

H. hibernica, north and east.

Hydrangea petiolaris, north and east.

Jusminum mudiflorum, north and east.

J. officinale, east.

J. polyamhum, south and west.

Kerria japonica flore pleno, east.

Lonicera americana (syn. L. grata), north and

L. fragrantissima, north and east.

L. halliana, east.

L. japonica aureo-reticulata, north and east.

L. periclymenum belgica, north and east.

L tellmanniana, south and west,

Magnelia grandiflera Exmouth, south and

M.g. Goliath, south and west.

Morello cherry, north,

Passiflera caerules, south and west.

P. Constance Elliott, south and west.

Polygonum baldschuumicum, north.

Frums triloha flore plena, south and west.

Pyracantha atalantoides (syn. P. gibbsii), north and east.

P. coccines, north and east.

P. rogersianu, north and east.

Resa William Allen Richardson, south and west.

TOWN GARDENS

- R. Caroline Testout, north and east.
- R. Danse de Feu, north and east.
- R. Gloire de Dijon, north and east.
- R. Golden Showers, north and east.
- R. Mme. Alfred Carrière, north and east.
- R. Mme. Gregoire Staechelin, north and east.
- R. Emily Gray, east.
- R. New Dawn, east.
- R. Paul's Scarlet, east.
- R. Mermaid, all.

Selamam crispum Glasnevin, south and west. Vitis coignetiae, north and east.

V. henryana, north.

V. vinifera Brandt, south and west.

V. v. purpures, south and west.

Wisteria sinensis, south and west,

W. vemete, south and west.

TREES FOR THE TOWN GARDEN

Acer ginnala

A. negundo variegatum

Amelanchier canadensis

Catalpa Ingnonioides

C.b. aurea

Crataegus oxyacantha

Gledstschia triocanthas

Laburnum vossii

Magnolia denudata

M. kobus.

M. sieboldii

M. soulangiana

Morus nigra

Prumus avium flore pleno

P. blireiana

P. cerasifera atropurpurea (syn. P. pissardii)

P. persica (peach)

P. sieboldii

P. seralata Amanogawa

P.s. Fugenzo (syn. P.s. James H. Veitch)

P.s. Shirofugen

P.s. Hokusai

P.s. Kolima

P.s. Tai Haku

P. yedsensis

Robinia pseudoacácia

Sephora Japanica

Sorbus aria lutescens

S. aucuparia

S. commixta

S. decara

S. discoler

S. esserteauiana (syrt. S. conradinae)

S. majestica

S. vilmorinii

PLANTS FOR GROUND COVER

The town garden has many problem spots such as shady places below walls and under trees, where the soil is poor and root-ridden; wet spots and dry spots; and banks and slopes where grass will not grow. If neglected, these corners will soon become weed-infested. Ground-cover plants are therefore invaluable. The following are some of the more reliable and decorative varieties:

Arundinaria vagani (dwarf bamboo), 1½ to 3 ft., very rapidly spreading, will tolerate shade. Plant in April or May.

Bergenia cardifolia (elephant ear), 9 in. Large heart-shaped leaves that remain dark green in winter; reddish flowers in March. Will flourish in sun or shade, and in almost any soll; successfully chokes all weeds. Plant in October or April.

Camallaria majalis (lily-of-the-valley), creeping; fragrant, white, bell-shaped flowers in spring. Thrives in shade and moisture; spreads quickly once crowns are established. Fortin's Giant is the best variety. Plant crowns in November, 3 in. deep and 6 in. apart.

Cotomuster conspirms decora, prostrate evergreen; small leaves; white flowers in June; red fruits last for most of winter. Grows vigorously; excellent for a low bank. Plant in October to February 3 ft. apart.

C. dammeri, prostrate, creeping evergreen; white flowers in June; coral fruit. Useful for banks or overhanging rocks. Plant in October to February 2 ft. apart.

C. herizontalis, deciduous; distinctive herring-bone branching that spreads horizontally and only slowly upward; pinkish flowers in May, bright red fruit, colourful leaves in autumn. Will thrive in quite inhospitable conditions, but likes sun. Plant in October to February.

Epimedium grandiflorum, 8 to 15 in. Leaves turn a rich bronze in autumn; white,

TOWN GARDENS



yellow, deep rose or violet flowers from spring to summer. Excellent ground cover in either sunny or shady positions. Plant in October.

E. pinnatum, 8 to 13 in., has bright yellow flowers in summer. Makes excellent ground cover in either sunny or shady positions. Plant in October.

Euosymus radicam variegatus, i ft., creeping evergreen; small, toothed leaves edged with white; flowers insignificant, but attractive pink fruit. If set 1 ft. apart, the plants will soon knit together to form a dense carpet; hardy. Plant in October or March.

Galax aphylla, 3 to 6 in; evergreen, perennial; shiny, heart-shaped leaves turn bronze in winter; white flowers in June. Likes moist, peaty soil, and shade; hardy. Plant in October to March.

Hedera helix (ivy), evergreen; lobed leaves; choose the small-leaved and variegated forms for ground cover. Very hardy. Plant in April.

Hesta (plantain lily), 1½ to 2½ ft.; perennial; luxuriant foliage; small flowers, usually lilac-coloured, from July to September; likes shade and moisture; hardy; will effectively smother all weeds. H. fortunei and H. sieboldiama are the best. Plant in October or March.

Hypericam calycimum (rose of Sharon), about 1 ft.; semi-evergreen; leathery leaves; yellow flowers from June to September. Very vigorous and hardy; will tolerate dry soil; clip in spring to keep in good condition. Plant in October to March.

There is emperieurs (candytuft), about 9 in.; evergreen; dense foliage; white flowers in spring and summer. Hardy and thrives in town conditions. Plant from March to May.

Lantium galeobdolon variegatum (variegated yellow archangel), 1 to 14 ft.; trailing perennial; slender, silvered leaves; yellow flowers in summer. Effective for ground cover under shrubs; likes shade and a light soil. Plant in October or March.

 maculatum (dead nettle), 4 to 7 in.; perennial; green leaves with white stripe; insignificant purple flowers in summer. Will thrive in the most difficult places. Plant in October or March.

Mahonia aquifolium (Oregon grape), 3 to 1 ft., but can be kept low by clipping; evergreen; the shiny leaves turn orange in autumn; fragrant golden flowers in late winter and early spring. Will tolerate shade, drips from overhanging trees and indifferent soil. Plant in April.

Pachysandra terminalu, up to 1 ft.; evergreen; oval, toothed leaves; insignificant greenish-white flowers in April. Thrives in shade, even under trees. Plant in November to February.

Polygonatum multiflorum (Solomon's seal), 2 to 4 ft. Elongated, curving leaves; pendulous white flowers in June; bluishblack fruit. Thrives in shade and any type of soil; excellent ground cover in a town garden. Plant in October or March.

Surcecees humilis, I to 14 ft.; dwarf, tufted evergreen; glossy, pointed leaves; white, fragrant flowers from January to March; black fruit, Likes shade and a well-drained soil. Plant in April.

Tellima grandifluo, about 2 ft.; perennial; the heart-shaped leaves turn crimson in autumn; attractive greenish flowers from April to June. Hardy; grows slowly but thickly and does well under shrubs. Plant in October or March.

Vinca major and V. minor (periwinkle), prostrate, trailing perennial; ovate leaves; bluish-purple flowers in April and May. Excellent ground cover for banks and shady places; will tolerate all but the poorest soils. The variegated forms are attractive. Plant in April.

Ferns also make excellent ground cover, and are effective for leaf contrast as well. As long as the soil is reasonably moist, the following are reliable:

Athyrium filix-femina (lady fern)
Dryopteris filix-mas (male fern)
Phyllins scolopendrium (hart's tongue fern)

TUBS

Tubs, large pots and vases are now frequently used to decorate a paved terrace adjoining the house, or for growing plants where soil conditions are unfavourable. The position of the containers can be rearranged during the year to produce new effects.

PREPARATION

Although tubs of oak, teak or stone are available ready for planting, less expensive and equally effective ones can be made from large wine casks sawn in half. Treat the inside of each tub with Cuprinol, bore holes in the bottom for drainage, and fix castors underneath for easy movement. If castors are not used, stand the tubs on bricks or wooden blocks to ensure drainage and aeration. Paint the outside of the tubs.

When the tubs are in position, put a 2- or 3-in. layer of crocks in the bottom of each, add some chopped turves, and fill with John Innes potting compost No. 2. Be sure to use only good soil in tubs. Give the compost a good soaking and allow it to drain before planting.

MAINTENANCE

Regular watering is essential for all plants in tubs, together with a fortnightly dose of liquid manure during the growing season. Once a year, remove the top 2 or 3 in. of soil, and replace it with a fresh mixture, preferably John Innes potting compost No. 2 mixed with peat, some vermiculite, which helps to retain moisture, and a handful of fine bone meal. Make sure that the drainage is adequate, that all brackets and bands are sound, and that the castors work easily. Give the tubs a coat of paint to freshen them up for a new season.

The following plants are recommended for cultivation in tubs:

SPRING-FLOWERING

Forget-me-not Muscari Narcissus Polyanthus Wallflower Tulio

SUMMER-FLOWERING

Agapunthus umbellatus
A. componulatus (syn. A. umbellatus mooreanus)
Begonia
Catmint
Fuchsia
Geranium
Heliotrope
Lilies such as Lilium regale, L. speciosum
Marguerite
Nicotiana
Pelargonium
Petunia
Salvia
Tropaeolum (nasturtium)
Verbena

SHRUBS

Acer palmatum (Japanese maple)
Box
Camellia japonica, C. williamsii Donation
Chaenomeles japonica
Chamaecyparis (dwarf)
Fersythia ovata
F. Lynwood
Fuchsia
Hydrangea
Juniper (dwarf)
Laurus nobilis (sweet bay)
Malus
Prumus. Among the prumus that car

Primus. Among the prunus that can be grown in tubs are dwarf Japanese cherries; trained eating cherries; almonds, including the dwarf Russian almond; nectatines; and peaches, such as Peregrine and Hale's Early.

Pyrus (dwarf, trained pears)

Rhododendron Rosemary Strawberries Viburnum carlesii

TOWN GARDENS



PLANTS IN TUBS

In small gardens, where space is limited, tub-grown plants are useful because they can be moved about when change is desired. Here, a Japanese maple, trained as a standard, grows in a cut-down barrel. The other tub contains begonias, pelargoniums (geraniums) and petunias

SINK GARDENS

The increasing use of stone troughs and sinks as containers for growing plants has made it possible to create most effective miniature gardens. Old stone sinks are no longer easy to find, especially in the southern part of the British Isles, but an old wash basin or concrete container makes a very good alternative.

One of the most important things to consider is drainage, particularly in a town garden where the trough is likely to be situated under a tree. For full details of drainage and soll for a sink garden

see Rock Garden Construction.

Planning and planting the sink garden is primarily a matter of taste, but the best foundation is a miniature rocky landscape with the semblance of an alpine meadow or a scree, broken at intervals by rocks and tiny trees such as the pygmy Scots pine, or a dwarf cypress or juniper.

A few spreading plants on the upper levels will give the miniature landscape a windswept appearance, while one or two trailing plants at the edge of the sink will enhance the proportion and soften

any hard lines.

The contours of the sink garden, and indeed its whole appearance, can be changed at will, simply by moving a few stones. To maintain a natural effect be sure to use stones of proportionate size and of the same kind. If the strata show in the stones make sure they all run in the same direction.

A whole range of alpines is available for use in the sink garden, though it is advisable to master the easier ones first, for this is a specialized form of alpine gardening which requires skill and careful attention.

EASY ALPINES FOR THE SINK GARDEN

Aethionema Warley Rose, rose-red, June. Androsuce tempervisoides, deep pink, May. Arenaria purpurascens, purplish, June and

July.

Armeria caespitusa, rose-red, April onward. Campanula cochleariifolia (syn. C. pusilla), blue or white, June to August.

C. pella, violet-blue, June.

Digathus microlepis, pink or white, June and July.

Draba aixon, yellow, April.

Erigeron uniflorus, white or purple, July and August.

Erodium chamaedryoides roseum, deep pink, July to September.

Helianthessum, wide variety, May onward. Hypericum reptons, golden-yellow, tinged red. August to October.

Iberis saxatilis, white, tinged purple, May

to July.

Linaria alpina, lavender and gold, July to September.

Limin salsoloides namum, white, tinged pink, June and July.

Morisia monantha, gold, May.

Penstemen reerlif, pale or dark blue, July. Potentilla verna nana, vellow, May and June. Rapulia australis, pale yellow, July.

Rese Oakington Ruby, ruby-crimson,

June to September.

R. Roulettii, rose-pink, June to Septem-

Saxifragu irvingii, pale lilac-pink, April. 5. oppositifolia, rose-red, March and April. Sedum, white, yellow or red, June to September.

Thymus serpyllum, purple, white, pink or

red, June.

Miniature bulbs may also be grown in a sink garden, including crocus species, miniature parcissus, scilla, dwarf iris, grape hyacinth, and several of the smaller tulip species.



WINDOW-BOXES

For the town dweller who would like to have a garden but lacks the space, a window-box provides a solution and the opportunity to indulge in some of the pleasures of gardening while being spared many of its problems. Window-box gardening is a compromise between the indoor pot plant and the outdoor garden border, but it still requires skill and care to bring plants to perfection. This is an instructive and entertaining form of gardening, resulting in a gay and colourful adornment for a house.

MATERIALS AND SIZE OF BOX. The size and shape of the windows, the dimension of the sills, and the architectural style of the house itself will determine the type of window-box to use. Though available with handles, window-boxes are best regarded as a permanent fixture.

Red cedar, teak, oak and elm are the best woods for window-boxes, in that order, while other suitable materials are concrete, cement, artificial stone, metal or plastic. An artificial stone box can be quite effective, especially if the outer face is moulded to accord with the design of the house front, and some metal ones are most decorative as well as practical.

Before painting any of these surfaces, apply an initial coat of sealing or priming paint as used for asbestos cement. Make sure that the material is quite dry and free from dust before painting. Wooden boxes require three coats of paint a year and the inside of the box should be treated with a preservative like green Cuprinol; about § pt. will be sufficient for a box 3 ft. long and 9 in. deep. This is harmless to plant-roots once it has dried, and will give good protection for at least three or four years.

Betterstill, line the box with light metal or zinc, which will both prolong the life of the wood and retain moisture in the soil.

Stone and concrete boxes are generally available in standard patterns, from 2 to 4 ft. long, about 8 in. deep, 7½ in. wide at the base and slightly wider at the top.

FIXING THE BOX

Place blocks of wood under the windowbox to keep it clear of the sill and fix the box securely by driving wedges between the ends of the box and the side walls, or, better still, by attaching it with hooks to eyelets in the window frame.

If the box is hung under the windowsill or fixed on a wall, use stout wallbrackets attached to the wall by Rawlplugs and 2-in. screws.

As an additional safeguard, a chain can be placed round the front of the box and fixed to hooks in the wall.

Use heavy-gauge galvanized straps to attach a box to a balcony railing, allowing one strap for each foot of box. If set on top of a brick wall or balcony, anchor the box with steel dowel pins set in the brickwork, again allowing one pin to every foot of box.

FILLING THE BOX

When the box is in position, spread a 2-in, layer of crocks in the bottom, placing one large piece over each drainage hole. Add a few pieces of charcoal to keep the soil sweet, and a layer of sphagnum moss, with some chopped turves and leaves. Then fill the box with really good soil, planting at the same time and finishing with the soil level and about 1 in, from the top.

Although a good compost can be made from a mixture of three parts loam, one part peat and one part sharp sand, all put through a fine sieve, it is easier, if a little more expensive, to use John Innes potting compost No. 2, which is available from horticultural sundriesmen. Never economize on the soil-filling for window-boxes.

Plant bulbs and other spring-flowering plants in September or October. When these have finished flowering they can immediately be replaced by summerflowering plants.

When arranging the plants, make sure that the effect will be bright without being garish by aiming for harmonious effects rather than contrasts. Grey foliage always makes an effective foil for colour.

MAINTENANCE

Since a window-box has only a limited soil capacity, is exposed to wind and sun, and often sheltered from rain by overhanging caves and other projections, it tends to dry out rather quickly. Regular watering is therefore necessary. Although the exact frequency of watering depends on the aspect and position, a good soaking every three or four days, preferably in the evening, is generally sufficient to keep the soil moist. Do not flood the box. A dose of weak liquid manure once a fortnight during the summer is a good stimulant to growth. Always water before feeding, as liquid feed is harmful when applied to dry soil.

Stir the soil between the plants occasionally with a pointed stick or old kitchen fork to prevent the formation of a hard crust. When the plants are removed at the end of every spring and summer season, fork over the compost lightly, and give a dressing of fine bone meal or general fertilizer.

If possible, change the soil completely during the winter.

RECOMMENDED PLANTS

showing favoured aspects

Ageratum, blue, June to September, south and west.

Alyssum, yellow or white, April and May, all except north.

Antirrhinum, usually yellow or red or pink, sometimes two-coloured, June to October, all except north.

Arabis, white, or pink, purple-blue, March to August, all except north.

Aubrieta, lilac to purple, April and May, all.

Auricula, multi-coloured, various combinations, March to May, all.

Begonia, white, pink, scarlet or yellow, July to September, all except north.

Bellis perennii (double daisy), white, pink or red, May and June, all.

Calceolaria, yellow, often marked with red or purple, June to September, south and west.

Calendula, orange or yellow, June onward, all except north.

Companies corpatice, blue, June to August, south and west,

Canna, usually yellow and/or red, May to August, south and west.

Celosia cristata, dark red, June to September, south and west.

Centaures meschats (sweet sultan), white, yellow or purple, June to September, all except north.

China aster, various, August to October, south and west.

Chionodoxa, blue, pink or white, March and April, all.

Chrysanthemum (pompon and Korean), various, August and September, all except north. Coleus, white, blue, purple, October, south and west.

Comolsulus tricolor, blue, pink or white, July to September, south and west.

Crocus, usually white, blue, yellow, orange or purple, February to April, all.

Dahlia (single bedding varieties), usually scarlet or yellow, August and September, all except north.

Dianthus, usually red, pink or white, July to September, south and west.

Fuchsia, reds, pinks and purple, July to September, south and west.

Gazania, yellow or orange, June to August, south and west.

Geranium, usually white, pink, red, purple or blue, June to August, all.

Heliotrope, blue or white, May to September, south and west.

Hyacinth, various, usually pink, white, blue or yellow, March and April, all except north.

Kochia, green or red, July and August, south and west,

Lobelia, blue or red, May to September, all.

Lysimachia nummularia (creeping Jenny), bright yellow, June to August, all.

Marguerite, white or yellow, June to August, all except north.

Mesembryanthemum, white, yellow, pink, red or purple, June to August, south and west.

Mignonette, white, June to September, all except north.

Myesotis palastris (forget-me-not), blue, white or pink, May and June, all.

Narcissus, white or yellow, March to May, all.

Nemesia, yellow, white, violet, red or blue, July to September, south and west.

Pansy, various, mixed, March to May, all. Pelargonium, pink, red, purple, white, June to August, all except north.

Petunia, various, July to September, south and west.

Phlex drammondii, red or mauve, July onward, south and west.

Polyanthus, various, from white to deep purple, March to May, all.

Primrose, yellow, March and April, all.

Rose (miniature varieties), various, June to September, all.

Salvia Blaze of Fire, scarlet, July, south and west.

S. patens, blue, September, south and west.

Saxifraga umbrosa (London pride), pink, May and June, all.

Scilla, blue or purple, March to May, all. Stock, white, pink, red or purple, July to September, all except north.

Sweet William, various, often two-coloured, May and June, all except north. Tagetes, yellow or orange, July and August, all except north.

Tropacolum majur (nasturtium), white, yellow, orange, red or purple, June to

September, all except north.

Tulip, various, often yellow, pink, red or white, April and May, all except north, Verbena hybrida, blue, purple, pink, red, yellow, or white, June to October, south and west.

Viola, usually white or purple, February

to April, all.

Wallflower, white, red, yellow, orange or pink, April and May, all except north. Wallflower, Siberian, orange, April to June, south and east.

Zinnia, yellow, red, pink or purple, July to October, south and west.

Greenhouse plants such as calceolarias, cinerarias, and certain primulas including P. malacoides and P. ninensis, ax well as dwarf Japanese azaleas, may be planted out in window-boxes in early May, just before they flower.

This practice cannot be relied upon to produce a display, however, as late frosts may damage the plants.

CLIMBING PLANTS

The following plants can be used to frame the window and its window-box: Clematis jacknamii

C. Mme. le Coultre

C. Nelly Moser C. Royal Velours

Hedera helix (variegated forms) Ipomoea (morning glory) Jasminum muliflorum Lomicera japonica aureo-ceticulatu Sweet pea Vitis henryana V. vinifera purpurea

WINTER SHRUBS

In hospitable conditions, wallflowers planted out in the autumn will remain green throughout the winter. The only thoroughly reliable plants for a window-box in winter, however, are dwarf evergreen shrubs. Even these are not completely satisfactory, for few people can afford to discard these fairly expensive plants at the end of the winter; on the other hand, if they remain in the window-box, some of the spring and summer flower display will have to be sacrificed.

It is possible to compromise by mixing such spring bulbs as crocus, grape hyacinth, scilla, daffodil and tulip, with a few dwarf evergreen shrubs. These could include box, dwarf juniper and dwarf chamaecyparis. Erica carnos produces an excellent flowering display in late winter and early spring, especially the varieties King George, Vivelli, Springwood White, and Springwood Pink. Santelina chamaecyparisms (syp. S. incana) and S. neapolitama will thrive if facing south or west.

A WINDOW HERB GARDEN

A window-box can combine beauty with utility if planted with a few herbs. They are not difficult to grow, and although less showy than bedding plants, they are nevertheless quite decorative.

Grow parsley from spring-sown seed, as well as lemon and common thyme, chives, mint and marjoram. The blue flowers of borage look most attractive hanging over the side of the box; balm and bergamot like moisture and a little shade.



HANGING BASKETS

A hanging basket is a simple but extremely picturesque way of decorating a porch with summer-flowering plants.

Remember, though, to hang baskets where they will not obscure the light, and make sure they are high enough to prevent them from being knocked. SIZE AND MATERIALS Hanging baskets should be 12 to 18 in. in diameter and 6 to 9 in. deep.

The larger the basket, the better the effect; avoid designs with a diameter of less than 12 in. as they are too small to hold sufficient soil.

Baskets are generally made of stout galvanized wire in an open-weave design and lined with black polythene, through which several holes have been punched. It is also possible to obtain baskets made entirely of Alkathene and fitted with a special drainage device.

FILLING THE BASKET

Place the basket on top of a large flower pot or bucket to hold it steady, and line it thickly with fresh, damp moss. If available, add a very small quantity of turves and peat, which will help to retain moisture. Then fill with John Innes potting compost No. 2.

Insert the plants before the basket is full of compost, and firm well round the

roots with the fingers.

A 12-in. basket will hold three plants from 3-in. pots, together with three or more smaller trailing plants between these and round the edge of the basket. Seeds of nasturtiums or small, rooted lobelias or coleus can be tucked through the sides of the basket.

Leave a shallow depression in the centre of each basket to collect water, and when planting is completed, soak the basket thoroughly by immersing it in a bath or tub of water. Allow surplus water to drain off before hanging up the basket. Do not hang baskets out-of-doors until all fear of frost is past, usually by the beginning of June.

MAINTENANCE

When the basket needs watering, always immerse it rather than water overhead with a can. Add a teaspoonful of liquid manure to each gallon of water once a fortnight during the growing season, and remove any withered flowers at the same time. Spray or wipe the foliage occasionally to keep it clean.

SUGGESTED PLANTS FOR A HANGING BASKET

Begonia
Calceolaria
Campanula itaphylla
Coleus. Invaluable for foliage effects.
Fuchsia, especially the pendulous varieties such as F. Cascade and F. Marinka.

Heliotrope Lobelia (trailing varieties)

Marguerite Nasturtium

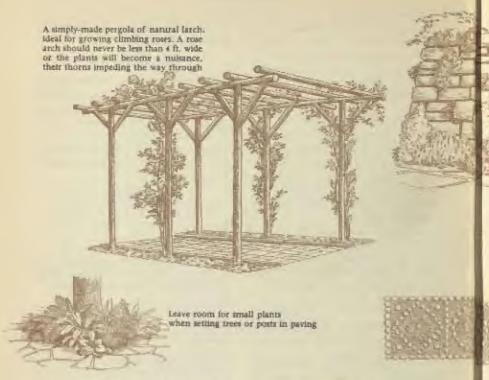
Petunia

Pelargonium (geranium). Use the ivyleaved varieties for draping the sides of the basket, and the upright zonal kinds for filling the top.

Verbena (dwarf and trailing varieties) Zehrina pendula (syn. Tradescantia zehrina)

(wandering jew)





Garden Construction

Long before a spade is actually put in the soil, garden construction should begin with an appraisal of the site's shape, size, soil and contours and a plan of how best to use them.

Every new garden can be treated in a variety of ways. The aim of any design and construction work should be to make the garden "live": to make it blend with existing features and the house that it will frame, and to give it a personality in its own right—although always a relaxing one.

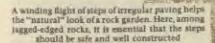
A mistake made in many gardens is overcrowding; too many effects and features are crammed into a confined space and so give an irritating and unsettling effect. To help avoid this error, it is worth while making a scale plan of the garden on graph paper before creating or redeveloping a site so that the juxtaposition of features can be worked out in advance.

PRELIMINARY PLANS

It is impracticable to suggest designs for gardens in general since gardens vary enormously in shape and size, and design is so much a matter of taste. But there are certain basic rules which should be observed in planning the design of a new garden.

Trailing plants will enhance the appearance of walls. They are easy to establish if nottable holes or gaps are left in the stonework. Be sure that there is plenty of soil at the back of the wall into which the roots can penetrate. It is easier to leave these gaps to dry wall construction, and the plants can be interted as each course is built up; pot-grown plants are the most suitable as they already have a good zoot ball

Cobbles can, with some patient planning, he set in charming patierns. Make the main shape first with larger cobbles, and fill its the pattern with smaller ones



OUTLOOK

It is important that a garden should look attractive from the house and, as a general rule, the more formal features should be those that are close to it. Pleasant lawns and borders should not be hidden by a tall screen of peasticks in a vegetable plot close to the house. But there is usually an alternative to siting the vegetables at the far end of the garden behind a trellis or rustic screen that cuts the garden in two. Flower beds can be used to give partial screening, but there is no reason why a vegetable plot should not be attractive in its own right.

NATURAL CONDITIONS

When choosing sites for vegetables and flowers, take account of the shade that will be caused by near-by trees, buildings and walls, and get to know the condition and types of soil the garden offers so that they can be used to the best advantage.

USING CONTOURS

One of the first decisions to be made is whether the natural slope of the site is to be levelled or left alone—and perhaps even exaggerated. Sloping sites can be more interesting than flat ones, but are more difficult to plan and maintain. If the site slopes up away from the house, make any retaining walls or earth banks well back from the house, to avoid "shutting it in".

EASE OF MAINTENANCE

When shaping the lawn avoid sharp angles and tiny peninsulas that will be difficult to mow; design abutting borders so that the mower can change direction in gentle curves rather than sharp bends. Allow for paths between hedges and the backs of borders so that hedge trimming and other maintenance is not too tedious.

COST

It is unwise to make do with cheap materials in constructing permanent features; it is better to have temporary ash paths until the budget will stand the cost of crazy paying than to build all the paths of plain concrete which can look hard and cold in some situations.

PROGRESSIVE DEVELOPMENT

It may take some years to get the whole of a new garden into good heart. If time and available labour are limited, allow part of a large site—particularly in a vegetable garden—to lie fallow until it can be brought into production without undue strain.

If a plan is decided upon before work commences, and then adhered to, progressive development of the site is possible, so that, for instance, hedges can be grown or fences built round an exposed site before the cultivation of plants that are known to require a sheltered situation is attempted.

On the following pages are ideas and constructional details for the features that may be introduced when a plot of land is turned into a garden. Most can be carried out by the average handyman, and all are capable of adaptation to suit varying needs and circumstances.

LEVELLING

In deciding how much levelling a garden site needs, try to keep as many natural contours as possible, to save soil movement and to avoid an artificial look.

For a lawn, gently rolling contours or slopes can be attractive; but it is essential to keep some areas flat: the terrace or a place for sitting-out is one example; the site for a pool or a shed is another.

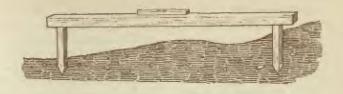
The equipment required for levelling is very simple: a collection of strong wooden pegs about 2 ft. long and at least 1 in. square, a length of level boarding 8 to 10 ft. long and stout enough not to sag in the middle, a spirit level and a mallet or hammer.

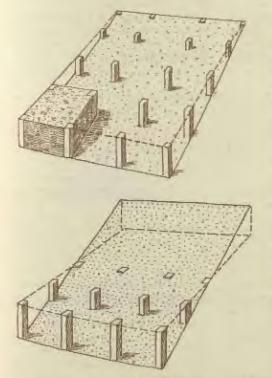
First decide on a spot in the garden at a mean level to which the remainder of the site can be levelled with the minimum of labour and expense. Once this has been selected drive a peg into the spot flush with the ground. The top of this peg will mark the height for the rest of the garden.

During any levelling operation it is important to see that no poorer subsoil is brought to the surface and allowed to remain there. Tackle one small area at a time: carefully remove as much of the top soil as possible, keeping it to one side until all the subsoil has been moved and then place the top-soil on top to bring the surface level.

On a very uneven site, boning rods will be required. These are strong stakes, 3 ft. or so in length, with a cross piece attached to the top to form the shape of a large letter T.

Select the mean level and drive a boning rod into the ground so that it is as near eye level as possible. A few feet away in the direction of the highest part of the garden, drive in a second boning rod. To check for level, place a straight piece of board on top of the rods, and adjust by using a spirit level.





LEVELLING A SLOPING SITE

Level a portion of the site at a time, beginning with a low area that will use up earth from a part of the garden that is higher than the mean level. Drive in a peg so that the top is flush with the ground at the mean level of this plot. Using the level board as a spacer between pegs so that the board can just "sit" on two pegs at a time, drive in further pegs all over the site, checking the height of each one by placing the spirit level on the board, which in turn rests on

two pegs at a time.

Once the site has been pegged out in this way, take away or add soil until the whole site is just level with the tors of all the pegs. The amount of soil to be moved will depend, of course, on the state of the ground. In many cases a rake will be a suitable tool for most of the work, apart from adding a little soil here and there from the higher parts with the help of a spade and wheelharrow. As the soil is levelled make sure that it is firmed well to prevent sinking later on. This applies particularly to light, sandy soils; heavy clays should not

be compacted too much

Drive in a third post at the highest part of the site, in a direct line with the previous two. If a visual sighting is now taken from the first post, along the top of the second post, the third post can now be adjusted until it, also, is exactly level with the previous two.

It may well be necessary to check for level across the site, and more boning rods can be used in the same way, taking frequent level checks by eye from any two of the original boning rods.

Measure the distance from the crosspiece to ground level on the rod at the mean level and mark off the same distance on all the other rods. Then a general picture of the amount of levelling required will be seen.

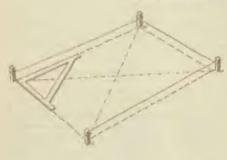
MARKING OUT BEDS AND BORDERS

This is a creative part of garden construction as it is the stage where the garden begins to take shape. Working from a scale plan of the whole site, mark out simple straight borders using a tape-measure and a garden line stretched taut between pegs, driven in at intervals to mark out the exact area.

As it is important to mark out right angles carefully, it is worth while making a permanent marker board or triangle from lengths of wood. If the sides are 3 ft., 4 ft., and 5 ft. long, there will be a right angle between the two shorter sides. (All measurements should be taken on the meredge of the timbers.)

There is much to be said for informal outlines in the garden. They are more natural, and in the smaller garden irregular outlines help to create more interest and can give an illusion of greater space. Irregular sweeps and curves are easily marked out with a pointed stick. A trickle of lime along any of the marking outlines will preserve them effectively for some time.

MARKING OUT REGULAR-SHAPED BEDS

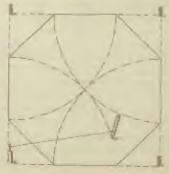


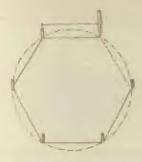
A home-made set-square can be used to make the right-angled corners in a rectangular bed. Mark them with pegs and lines. To check the accuracy of the finished shape, measure the diagonals, they should be the same length



To make an octagonal bed, mark out a square, and draw four arcs from the corners, using at a radius the distance from a corner to the centre of the square. The points where the arcs cut the square make the corners of the octagon.

To mark out a circular bed drive a peginto the ground at the approximate centre of the bed. Fasten a length of twine half the diameter of the required bed to the peg, and attach a sharp stick to the other end of the twine. Holding the stick at that the twine is kept taut, acribe a circle into the soil, using the centre peg as a pivot





To make a regular, six-sided shape draw a circle and, using the same radius, mark off points around the circumference. Join up the points



An oval bed can be marked out by using two pegs and a length of cord approximately three times as long as the distance between the pegs. Knot the cord into a loop, place it over the pegs and, with a sharp stick taking up the slack, acribe the shape. The closer together the two pegs are, the more nearly circular the oval will work out

PATHS

Well-constructed and attractively sited paths can add a great deal of character to a garden. Their main purpose is to link the garden's principal features and to provide easy access to areas that require attention. It is advisable to choose materials that will blend with the type of garden under construction, but take advantage of the scope that modern materials provide to produce intriguing designs and patterns.

Straight paths are the cheapest to construct as they need less material, but curving paths are more interesting. The number of paths depends on the size of the garden and the number of features in it, but it is a sound rule to keep it to a minimum.

Main paths should be wide enough to allow two people to walk along them comfortably side by side, and to take a wheelbarrow easily; a useful width is 3 to 4 ft. Even subsidiary paths should not be less than 2 ft. wide, and a driveway will need to be at least 12 ft. wide.

FOUNDATIONS

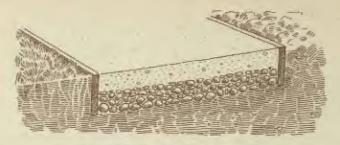
Lay paths on firm foundations, as solid support and good drainage will prevent tracking and general subsidence later on. The lighter the soil, the more consolidation of the foundations will be required.

Mark the site for a path by line and pegs and excavate the soil to a depth of at least 6 to 9 in. Fill the trench with rubble, clinker or broken bricks, ramming down firmly. The finished level of this material should allow for the thickness of the surfacing material.

CONCRETE PATHS

Concrete is reasonably priced and fairly easy to use, and so has become one of the most popular materials for paths.

It is stronger if it matures and dries slowly. Cover the surface with sacking, which should be kept damp during dry weather, or use sheets of polythene which create a natural dampness underneath. Never lay concrete during frosty weather as it may crack.



CONSTRUCTING A CONCRETE PATH

Lay lengths of timber down both sides of the path, and level their top surfaces to the correct height of the finished path, allowing for a layer of concrete at least z in. thick. As the concrete is laid, draw a strong piece of board across these levelling guides to even out the surface. Use a heavy piece of wood to ram the concrete well into position, as much of the path's final strength will depend on its firmness. Whether the concrete should have a smooth or rough finish is a matter of choice, but a smooth finish is much easier to keep clean

MATERIALS

A suitable mix for concrete paths is:

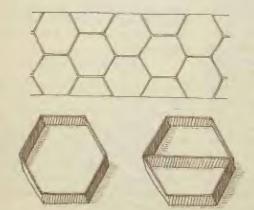
- 1 part cement
- 2 parts sand
- 3 parts shingle

Mixed ballast is often used to avoid the need for buying sand separately; the mix is:

- 1 part cement
- 4 parts mixed ballast

The best size for the ballast is a grading from \$\frac{1}{4}\$ to \$\frac{1}{4}\$ in. Use good quality graded from \$\frac{1}{4}\$ in. down (to give a smooth finish), with a good proportion of larger particles to help bind the mixture.

One cubic yard of concrete will cover approximately 16 sq. yds. of path to a depth of 2 in., or about 10 sq. yds. of path to a depth of 3 in.



MOULDED BLOCKS

Cement blocks of any shape or size can be made to moulds—either fron or well-smoothed wood. For this six-sided shape, suitable measurements are: diameter, is in.; depth, i in. Half pieces can be made for edging the path by putting a strip of metal or wood across the mould. Grease the mould liberally to make removal of the cement easy

READY-MIXED CONCRETE

Concrete purchased in this form offers a tremendous saving in time and labour. It is delivered in special lorries that mix it on the way and deliver it as near to the actual work as possible. The usual minimum quantity is 1 cu, yd. The concrete can be ordered in several mixes and there are supply depots in most areas.

CRAZY PAVING

Crazy paving gives a natural effect which is suitable for almost any garden design.

Various grades can be purchased; the usual thickness is about 1 to 1½ in., and thicker grades are from 1½ to 2½ in. The approximate quantities that will be required can be calculated from the following table and are based on a 10-ft. length of pathway:

Thickness of stone		Path width	
	2 ft.	21 ft.	3 ft.
I to 11 in.	3 cwt.	55 CWL.	4 cwt.
11 to 21 in.	54 CWL	64 CWL	8 CWL

Try to buy crazy paving locally as carriage costs are high.

LAYING

Crazy paving can be laid either in loose material, such as ashes or sand, or in cement, which gives a stronger, more permanent path. As the individual pieces are not always of uniform thickness, take care when bedding them down to make each piece perfectly level and stable. Use a spirit level on a short piece of straight-edged wood to ensure that a constant level is maintained in both the width and the length of the path as the work proceeds.

Lay the largest pieces of paving first and fill in the gaps with smaller pieces, so that the final spaces between the stones are not more than about 1 in, wide.

Lay larger pieces along the edges of the path; small pieces are not as stable and if laid on loose material may tip up when trodden on.

The concrete in which crazy paving is set should be about 2 to 2½ in. thick, on a firm foundation. The best mix is one part cement and four parts sand. Tap each piece of stone firmly into the wet cement, and a day or two later, when the concrete has set, fill in the joints with the same mixture. Be sure to keep the cement off the surface of the stones.

A pleasant effect can be gained if suitable creeping plants are established in the path. For this purpose leave gaps between stones, making sure that ample room is allowed for root development. Fill in the holes with good soil, right through to the soil below the foundation.

SLABS

Prefabricated slabs for path-making are available in several standard sizes, ranging from about 9 in. square to about 2 ft. square. Rectangular slabs can also be obtained. A pleasant and unusual design can be created if a mixture of several colours is used. This type of paving is laid exactly as crazy paving.

BRICKS

Quite intricate patterns can be formed from bricks; they can be laid on edge or flat or in combinations of the two. Use only old or well-weathered bricks with coarse surfaces (new bricks look out of place in the garden and are expensive), and lay them in a thin layer of concrete, in the same way as crazy paving.

Quite a large number of bricks are required to cover a comparatively small area. The following table gives numbers required for a 10-ft. long path:

How land		Width of path			
	3 ft.	24 ft.	3 ft.		
Flat	71	89	107		
On edge	107	134	160		

GRAVEL

Although gravel is often used for path construction it tends to stick to shoes in wet weather; also, it does not keep its level well and frequent raking is necessary. But it is cheap and easy to obtain.

Apply a thickness of 2 to 3 in. on top of a secure foundation. It is a good idea to mix very coarse sand with the gravel at the rate of 1 part to 2 parts gravel, to bind the gravel together. Gravel paths do not suppress weeds, but it is comparatively easy to keep them clean by running the hoe through the gravel or by using a selective weedkiller. The following table shows the quantities of gravel required for 10-ft. lengths of path:

Thickney		Width of path			
	2 ft.	21 ft.	3 ft.		
2 in.	34 CWL	4 CWL	5 cwt.		
3 in	5 090	61 cur	21 cost		

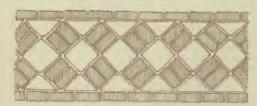
NEW MATERIALS FOR QUICK RESULTS

One easy way of laying paths is to use a special tarmacadam material that is sold in sealed paper bags complete with granite chippings which are scattered on the surface to form an attractive and crisp-looking pattern.

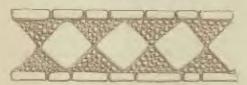
The material is tipped out of the bags and simply raked level to an average thickness of \(\frac{1}{2} \) in. The chippings are then scattered evenly over the surface and rolled in, and the path is ready for use. It is, of course, essential to have a firm foundation so that the path will not become "lumpy" after hard use.

Another very quick method is to pour a liquid bitumen solution (which is obtainable in tins) over the path area and scatter stone chippings or sand over it. The surface then merely requires rolling.

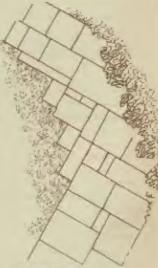
CONTRASTING MATERIALS Different materials can be blended together to make interesting patterns for paths and terraces. But remember that such surfaces may be difficult to walk on, particularly in shoes with high heels



Brick and concrete squares



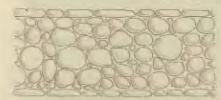
Stone slabs with cobbles



TURNING A CORNER
A pattern of different-steed
paving stones can be fitted
together to turn a corner neatly
and give an attractive, irregular
edge to a path



A crazy paving path looks well in any type of garden. Bordering plants overhanging the edges of the path give a softer effect



Flat pebbles make a surface that is more decorative than functional. They look particularly attractive near water, but are unsultable for much-used paths, or paths where a barrow will often be wheeled

PATHS OF UNDRESSED NATURAL STONE SET IN CEMENT

Crazy paving is excellent for most types of path. Use hard stones that will not flake, and make the spaces between them less than a in. wide

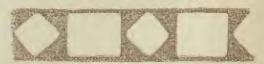




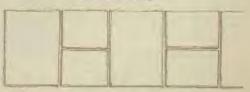
A path of paving stone and cobbles set in concrete

PAVING BLOCKS

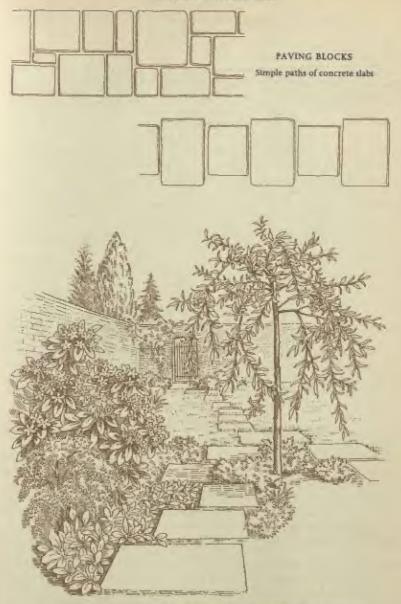
Concrete paving blocks and dressed stone are sometimes available from local councils when street paving is being replaced; they are ideal for surfacing paths and terraces



Stone slabs set in geit



Simple path of concrete slabs

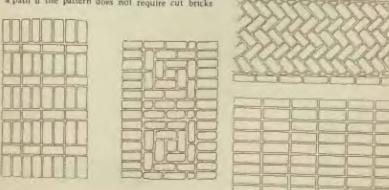


large paving stones set in grass and among low-growing shrubs give a greater impression of space and informality than a precisely-edged path. Set alabs level with lawn surface so that the mower can go over them



BRICK PATHS

Patterns of bricks; is will be easier and quicker to lay a path if the patiern does not require cut bricks



STEPS

There are two particularly important points to keep in mind when building steps: proportions in design, and safety. The basic rule for proportions is that twice the riser (the height of each step) added to the tread (the part which is trodden on) should equal 24 in. The best proportion is 12 in. tread and 6 in. riser.

Weak or badly constructed steps are dangerous, and great care should be taken to see that plenty of rubble is rammed into position as a foundation. On light, sandy soils at least 6 in, of rubble foundation will be required; less on heavier soils.

Do not build steps that are too narrow. Their width should be in proportion to the feature into which they are designed, but they must be wide enough to permit comfortable and safe passage. From the point of view of design, a sound rule is: the longer the flight of steps, the wider it should be. It is unwise to use small material in the construction of steps, unless it is bedded down into concrete; for instance, small pebbles, small pieces of stone slabs or bricks should not be set in ashes or sand.

The simplest and easiest form of step is made from concrete. In many cases the actual steps and risers will need to be cut out of a solid bank of earth. Begin at the base, and cut away sufficient earth to allow rubble to be firmly packed into place and to leave room for the concrete surface material.

For the construction of the risers, cut pieces of wooden shuttering to the depth of the riser.

Lay a concrete surface on a firm foundation at the foot of the steps. Place the first piece of shuttering in position on this surface and 2 in.—the thickness the

concrete will be-away from the face of the soil part of the riser. Drive in strong wooden pegs to hold the shuttering in position and fill in the 2-in, gap with concrete. Use a piece of wood to tamp or work in the concrete as it is applied until It finishes flush with the top of the soil and rubble riser. Two or three inches of wooden shuttering will now be left above this concrete riser. This will be the depth of concrete to apply to form the tread. Construct the tread by applying concrete and smoothing it off level with the top of the wooden shuttering of the riser. It will be necessary, of course, to provide shuttering for the sides of the steps as they are built up, unless they are cut out of a bank of soil, in which case the soil itself will support the concrete as it sets.

Curved steps can be constructed with concrete, but they require more complicated shuttering. The method is exactly the same, except that the curves are provided by bending flexible material, such as sheet metal or waterproof hardboard, and holding it in position with pegs.

Stone slabs—coloured, plain, or a mixture of both—are ideal for treads. Although large pieces can be bedded down into axhes or sand on a firm rubble foundation it is better to lay them in a thin base of concrete. About 1 in. of concrete will be sufficient and the joints can either be pointed or filled with concrete. A suitable mix is: 1 part cement, 4 parts sand.

The risers can be made from smaller pieces of slab, also cemented in place, but it is usually better to use weathered or rough-faced bricks, as they are much easier to lay.

Steps can be made completely with

bricks, using for preference either old ones or rough-faced types. They can be laid flat or on edge and, if bedded into a thin base of concrete, will produce extremely strong, durable steps.

Where slabs or bricks are used, tap them gently into the wet concrete as they are laid so that they "sit" well into the foundation. Make frequent checks with a spirit level on a short piece of timber laid across the bricks.

If a mixture of materials is to be used in step construction, some attractive and unusual effects can be achieved—pebbles set in concrete with brick or paving surrounds, or bricks set at various angles. As paving slabs can now be obtained in various sizes and shades, there are endless variations in design to choose from.

An unusual flight of steps can be made with logs of wood as the risers. The treads are the earth itself, and the log risers are held in position by strong wooden pegs driven in at each end. It is as well to sink each log slightly in a shallow trench to give added strength and stability.

Logs of at least 6 to 9 in. diameter should be used, and it is best to use wood that has been felled and cut for some time.

As with walls, plants can be added to steps to give a more natural finish. Leave intervals in the treads and risers in which to naturalize suitable plants. These holes must lead to soil beneath, and in many cases it will be necessary to allow for this at the rubble-laying stage of construction.

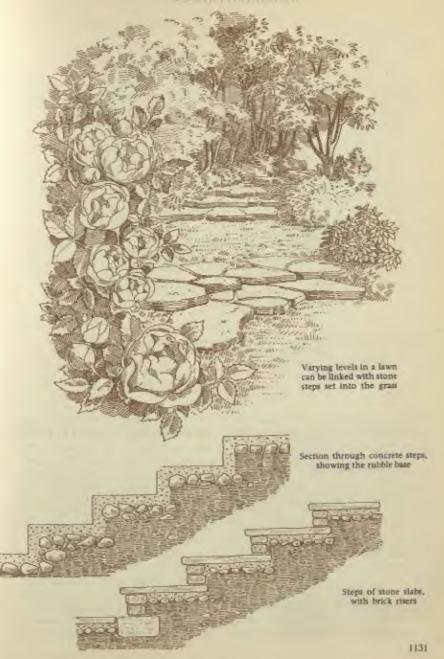


STYLES IN STEPS

Steps may be needed to provide access to the back of a bank planted with shrubs. Circular cement slabs set irregularly can look delightful. They can be made in a metal mould; the metal tyre from an old cartwheel would be ideal for the purpose.



Between banks of clipped rosemary and lawender hedges, wide steps of stone and cobble give a mature and mellow look





A formal—and complicated—pattern of steps leading to a raised terrace.

The width of the treads is varied to avoid monotony

WALLS

Walls may be needed in the garden for protection or privacy, for dividing areas, or for retaining the soil where there are drops in level or steps. Whatever the function of garden walls, they can be turned into attractive features. But, however simple the construction, walling is not cheap.

Old or rustic bricks blend well in most gardens, and effective designs can be constructed of York, Somerset or Cotswold stone.

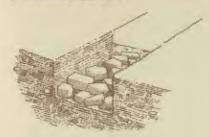
CONSTRUCTION

The strength of any wall depends on its foundation. Dig a shallow trench about 9 in, deep and a little wider than the wall

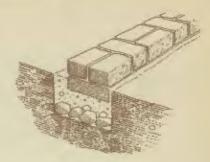
is to be. Tip rubble into the trench and ram it well down, to make a 6 in.-deep layer. Lay 2 to 3 in. of concrete on top and smooth roughly. (A suitable mixture for the concrete is: 1 part cement, 34 parts sand, 5 parts shingle. If mixed ballast is used: 1 part cement, 6 parts mixed ballast.) The finished level of the foundation should allow the first course of walling to be just below soil level.

A wall constructed with slabs of stone can be built up in two ways: dry, or with cement bonding which will be needed if the wall is more than 3 to 4 ft, high. To bond a wall spread a layer of concrete about \(\frac{1}{2} \) in, thick over each course of stone and place the next course in it,

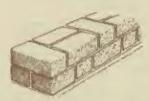
BUILDING A BRICK WALL



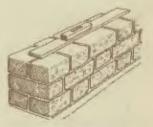
Dig a trench a little wider than the wall and lay a foundation of rubble and concrete



Lay the first course of bricks just below soil level



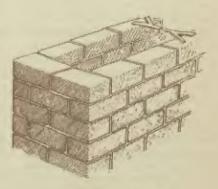
In each course, lay headers and stretchers (widths and lengths) alternately to give greater strength, or build alternate courses of headers and stretchers



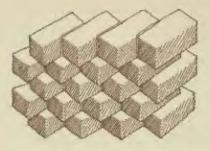
Make frequent checks on the wall's vertical and horizontal faces with plumb-line and spirit level



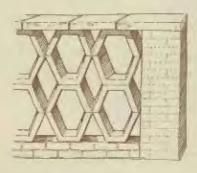
Finishing a wall: a double layer of tiles overlapping the wall by an inch all round is finished off with a last course of bricks



Metal ties should be used in a cavity wall more than 3 ft. high to hold the two sides together. They should be apaced at 3 ft. Intervals



A more ambitious method of laying bricks: this diagonal effect is ideal for a bankretaining wall





A decorative wall of precast, V-shaped concrete blocks, with concrete slabs laid across the top. This type of wall lookabest when painted

tapping each slab in place as the work proceeds. A joint should never be directly above a joint in the row beneath. As work proceeds, point or smooth the joints over with a trowel. Select stones for the bottom two courses from the largest pieces in the pile, to ensure that a really firm, strong base is provided.

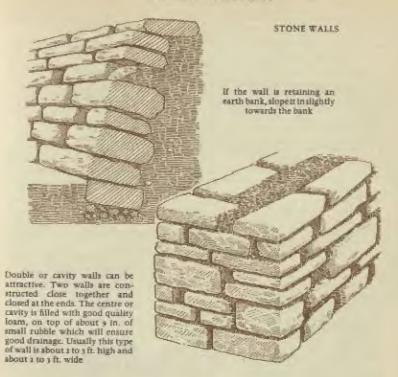
A dry wall, constructed without cement, is ideal for low features. The same principles of stone selection and laying should be observed. Bed each course in a 2-in, layer of good loamy soil which should be packed thoroughly between the joints with a rounded stick,

A double thickness of brick makes a good solid wall. Make sure that each row of bricks is securely laid in a \(\frac{1}{2}\)- to \(\frac{3}{2}\)-in. layer of mortar or cement. Bond the

bricks as for walling stone, and check the level frequently with a spirit level.

A great deal of time can be saved in ensuring that each row of bricks is level if a brick is laid at each end of the row first of all and, when completely straight and level, a length of strong twine is run between these two bricks, across their tops, to serve as a level along the length of the wall. This twine can be attached to two long nails inserted in a course of bricks lower down. Use a plumb line to keep the faces of the wall vertical.

Where high walls are required, it is not advisable to construct dry walls, as sufficient strength and rigidity can only be supplied by a concrete or mortar bonding. Walls more than 5 ft. high require buttresses every 15 ft. along the wall.



TERRACES AND PATIOS

In gardens that have a pronounced slope or are very uneven, terraces are often made to provide level sections for lawns or flower beds. They can be used, too, as patios—sitting-out areas—and in this case are usually paved in some way.

Between terraces at varying levels, or between a patio and the rest of the garden, steps and low walls may be needed; the siting and style of these features will have a great effect on the look of the finished garden.

The work of levelling is the biggest and most important task in terrace building (see Levelling), It is important that dry and firm flooring is provided for a patio

that is to be used as an outdoor livingroom during summer months. There are several alternative materials, ranging from bitumastic preparations to bricks and paving stones; choose one that suits the character of the house, for the patie will probably be constructed close to it. If the house is of modern design, coloured slabs arranged in simple designs look effective; an older property is better suited by rustic bricks and insets of pebble stones. Crazy paving is a most attractive material to use, but ensure that gaps between the stones are filled with cement, so that there is no danger of people tripping over raised edges.

Keep all paving work below the level of the damp course of the house. The finished surface of patio or terrace must be at least two or three brick courses or 6 to 12 in. below the damp course, which is usually recognizable as a thin layer of bitumen felt or similar material running between two courses of bricks.

An unroofed patio should have a slight slope away from the house so that rainwater will not collect but be carried away from the house walls.





This terrace has been constructed as a suntrap. To the north and east tall shrubs provide shelter from the winds. The heavy appearance of the wall is relieved by varying its height and adding two finishs



MOBILE PLANTS

Farthenware pots of varying shapes and sizes can bring the charm of foliage and flowers to a paved terrace, and they can be moved about to make different effects

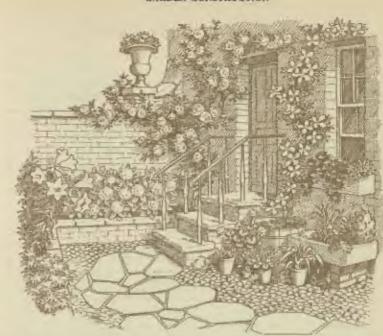


Raised both round the trees in a terrace allow moisture to reach the tree room, and also provide an ideal site for growing bulbs



Building a terrace may involve making provision for trees on the site. Leave an unpaved area round each one so that moisture can get to the roots, it can be covered over with loose pebbles or planted with shade-loving plants and ferms





Crazy paving and cobbies, with raised flower beds and plants grown in a variety of pots and containers, have here turned a concrete yard into an attractive garden. The varied surface of the tetrace gives contrasts of colour and texture

A large paved patio should be sheltered from the wind; trees, walls and hedges are all useful for this purpose. Tough, low-growing plants help to soften the edges of the paving, and small plants such as alpines can be set

between the stones

FENCES, SCREENS AND PERGOLAS

Fences and pergolas in a huge variety of designs and sizes can be easily erected. Like walls, they are used to provide privacy, shelter from winds and sometimes to divide the garden neatly into sections.

FENCES AND SCREENS

Fences must be strong, not only to support their own weight, but also to withstand considerable wind pressures, especially if the garden is exposed and the fences are close-boarded or solid. Creosoting or other treatment will be necessary to prevent wooden fences rotting.

The strength of a fence will depend upon its supports and the manner in which they are inserted in the ground. Timber supports of a thickness of 3 to 4 in, will be sufficient for most purposes; treat them with wood preservative before sinking them in the ground. Where exceptional strength and support is required, use concrete posts, which can be purchased in various sizes. For light fences the posts can be spaced about 10 ft. apart; but the usual interval is 6 ft.

The "clean face" of the fence—or the side which does not have the supports showing—should face the neighbour's garden. Make quite sure, also, that the posts and fence are inside your boundary line. By law, fences between gardens must we exceed a height of 7 ft.

TYPES OF FENCES

A solid or close-boarded fence gives complete shelter and privacy, but may be ugly and uninteresting. Usually lengths of boarding about 4 in. wide and \(\frac{1}{2}\) to 1 in. thick are used. The pieces are placed close up to each other and nailed on to at least two horizontal rails let into the supporting posts. The bottom rail should

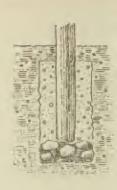
be about 2 ft. above ground level and the top rail about 2 ft. from the top of the fence. Both rails should be fairly substantial, about 3 in. deep and 2 in. thick.

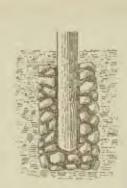
Another type of solid fence is made from weatherboards. These are wedge-shaped pieces of wood usually 4½ to 6 in. wide with one edge ¼ in thick and the other edge tapering to ¼ in. As these are laid, the thick edge of one piece overlaps by at least ½ in. the thin edge of one that has just been fixed.

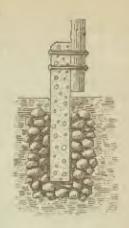
A more expensive type of solid fence can be made up of tongued and grooved timber. Each piece has a groove cut in one edge and a tongue, or thin strip, sticking out of the other. As the fence is built up, the tongue part of one length of wood is carefully tapped into the groove of the length which has just been fixed. A very effective design or pattern can thus be produced, especially if "V-matching" is used. Small angled cuts are made on the edges of the wood, so that when the pieces have been joined together, a grooved surface is produced.

Even fences of more open design will provide a great deal of privacy and shelter if they are clothed with suitable plants.

An open lattice design can be constructed quite easily and cheaply. Make a strong, square framework of 1-in. by 1\frac{1}{2}-in. wood; this framework should be made into convenient lengths about 6 to 8 ft. long if a long fence is under construction. For the lattice, use thin laths of wood about 1 in. by \frac{1}{2} in. Nail vertical lengths 8 in. apart to the framework, and then nail horizontal lengths over the vertical strips, again spacing them 8 in. apart. Where several sections have to be made up for a long fence, fasten them to supporting posts of 2-in. square timber let into the ground at 6 to 8 ft. intervals.







SINKING FENCE SUPPORTS

Whether timber or concrete, fence supports should be sunk into the ground to a depth of at least if ft. The bottoms of timber posts will need to be carefully treated with a suitable wood preservative; allow the ends to stand and soak in a deep container of the preservative for at least 24 hours. Pack the supports firmly into their holes with pieces of brick or slabs of stone, and then replace the soil, firming it well round the posts with a heavy piece of wood. Better still, position the posts on a rubble base and pour concrete into the holes round the posts, working it down thoroughly with a piece of stile. If the soil is often wet, sink a 3j-ft, concrete post in the ground and bolt the wooden fence post to it, keeping it clear of the ground. The wood will then not be as liable to rot

Timber of greater thickness can be used to make more effective designs and pieces 3 in, wide and 1 to 13 in, thick are often used. Instead of overlapping the vertical or horizontal pieces, such heavy timber must be crossed with halving joints. They can then be nailed, or preferably glued and screwed together. The size of the lattice squares should be in proportion to the thickness of timber used. An average size is 2 ft. square.

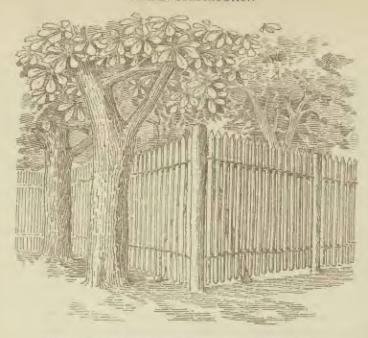
Many interesting fence designs can be produced if different materials or styles of construction are mixed. There are many possible combinations, but here are a few simple ideas:

An 8-ft. long section of either tongued and grooved boarding, or 4-in. wide and 1-in. thick butt-jointed timber, followed by a + to 6-ft. long section of 3-in. by 11-in.

thick timber set with the 1½ in. edge facing the garden. Space these pieces of timber vertically and about 9 to 12 in. apart. The complete 12- to 14-ft, sections should be framed like a picture with wood 4 in. wide and 1½ in. thick. The height of the completed fence can be anything from 5 to 7 ft.

Another design can be produced in exactly the same way if bamboo poles of at least 1½ in. diameter are used in place of the 4-in. by 1½-in. thick timber. The poles can be secured in place with long brass or galvanized screws fixed through the framing wood and into plugged holes in the top and bottom of each pole.

Interwoven panels make excellent fences and screens. They are most attractive and easy to handle. These can be



Cleft chestnut paling is a useful type of fence. It can be purchased in rolls of various lengths and up to heights of 4 to 1 ft., and can be wired to uprights sunk into the ground at 6-ft. Intervals. The individual palings, usually spaced a few inches apart, are attached to horizontal strands of strong wire. It is possible to purchase fencing with the paling nearly touching, to give more privacy and greater wind protection.

made at home, using strips of 3-in. wide and 2-in, thick wood, although readymade sections are usually obtainable in heights from about 3 ft, to 6 ft. Suitable supporting posts for the sections can also be bought, and capping pieces for the tops of these posts provide a neat finish.

Although most types of interwoven fencing are not completely private, it is possible to purchase certain types that are completely peep-proof. They are, of course, more expensive.

Another type of ready-made fence is wattle, which is similar in construction to basket work and has a charming rustic appearance, Sections 6 ft. long and of various heights are readily obtainable.

Many gardens, especially those in new open-planned estates, have low brick front walls. Sections of low fencing erected on top of these walls give greater privacy and protection.

It is also possible to buy fencing kits in a very wide range of designs. All the parts are cut to length, all necessary joints, holes and slots are accurately cut, and even the nails and screws are provided.

PATIO SCREENS

If a patio cannot be sited where there is privacy and natural shelter from winds, it may be necessary to provide walls at both sides and perhaps partly across the front of the feature. Often a selection of trees or shrubs or even a well-trimmed hedge serves the purpose; but artificial protection is more speedily assembled and a greater variety of design can be achieved.

The most versatile material to use is timber. Soft-woods, such as deal and western red cedar wood, are the easiest to work, and the latter is particularly good as it produces a natural oil that combats rot and insect damage. The wood is an attractive reddish-brown colour that weathers to silver-grey unless varnish is used to preserve its original colouring. Cedar wood is more expensive than other soft-woods, but the initial outlay is well worth it. Teak and oak are two very durable timbers, but their hardness makes them difficult to work.

A most attractive patio-framing can be constructed in the form of large open lattice design with the squares or openingsabout2st, by2st. Cut the timber from 3-in. by 2-in. planed cedar or other softwood. Use halving joints and screw or glue them. The bottom 3 ft. or so can be filled in with tongued and grooved wood, 4 to 6 in, wide and about 4 to 1 in, thick. The squares can be left open or filled with marbled or decorated glass.

False rebates, in which the putty and glass rests, can be made from 1-in, by 14-in, wood strips tacked on to the inside edges of the framing.

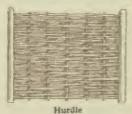
Pergola or rustic poles are easy to erect and can be formed into attractive designs. The supporting pieces should be selected from poles having a thickness at the base of at least 3 to 4 in.

To provide shelter from strong sunlight, a simple roof may be erected: arrange lengths of strong timber, on edge and spaced about 2 ft. apart, to run from the wall of the house to the edge of the patio. At the wall end fasten the timber to a strong beam that has been Rawlbolted into the wall. At the other end support the cross pieces on a similar strong beam. Use posts about 6 ft. apart. to support the front beam.

Use substantial timber, about 3 in. by 6 in, for this kind of feature. Secure fastening is important, and it is advisable. to use threaded bolts. Trailing plants trained over this type of cover will not only provide additional attraction, but



Four types of timber fencing; all except hurdle can be creosoted or treated with wood preservative to increase their durability







Woven wood and trells

also some shade and privacy. Glass can also be used as a roof cover, and strong glazing bars 3 in. by 2 in, should be used. Green-shaded or marbled glass is ideal.

The screening material of the patio can be let right into the flooring or supported in a low wall, constructed with coloured slabs. If the wall is of cavity design, it can be planted up with flowers which will give a bright display at the foot of the screen during the summer months. Trailing and climbing plants can also be established in the cavities.

PERGOLAS

A pergola formed by a series of arches can take the form of a covered walk, or it can be constructed to provide attractive screening or partitioning. Although pergolas are usually made of larch or pine poles, they can be constructed with thick baulks of timber about 4 to 6 in. square, or as a double row of brick pillars, with very thick lengths of timber (9 in. square) secured at the top and lying across the pillars to form a "roof".

A pergola constructed from larch or pine poles should have a simple design; too many fussy details can result in a weak structure. Use poles having a minimum cross-section of 2½ to 3 in, for the uprights, and insert them 2 ft. into the ground. The tops and cross-pieces should be nearly as thick and strong, but the decorative filling-in can be a little less substantial—a thickness of about 2 in, is enough.

A pergola looks attractive clothed with creeping or trailing plants. When arches are made, allowance must be made for the growth of the plants so that one can walk through without the plants causing annoyance. A height of s ft. is adequate. Nail the pieces of pergola carefully together and, where they meet at the angles of the framework, cut the ends to fit neatly and securely.

The simplest design for an archway consists of two rows of strong uprights firmly anchored into the ground and spaced about 6 to 8 ft. apart, with the rows far enough apart to accommodate the pathway. Fasten a series of poles across the tops of these uprights and parallel to the run of the path. Before they are fixed in position, make quite sure that all the uprights are the same height and perpendicular.

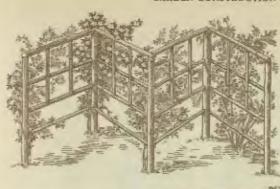
Construct the "roof" with a set of poles cut so that they overhang the width of the path by a foot or so each side. Nail each length to the top of the structure.

On each side of each upright, fit short supporting arms screwed into position about 2 to 3 ft, below the tops and forming a triangle with the long run of poles, again about 2 to 3 ft, away from the tops of the uprights.

More ornamentation can be incorporated, but this basic design is simple to build and pleasant to look at.

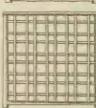
A pergola need not be an archway. It can consist of a single line of posts spaced about 6 to 8 ft. apart with a series of horizontal pieces forming a continuous top rail. It can be embellished with smaller pergolas, used to divide off parts of the garden or to form secluded areas for sitting out.

Archways, covered ways and screening can be made up with ordinary timber approximately a to 4 in. square. The most effective timber to use is western red cedar which is easy to work and most attractive in colour. It requires no painting or preserving and will last many years without attention. Its delightful warm, red colour blends in admirably with any type of garden, and even if it is allowed to weather to a silver-grey (this will happen if it is not initially treated with either clear varnish or linseed oil) it will still retain its unique character.

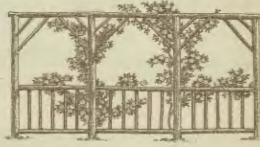


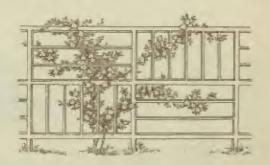
Larch is an ideal wood from which to make screening, as it has straight growth and retains its bark. To prevent rot, stand posts that are to be buried in the ground in wood preservative for several hours before erecting them.

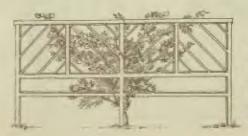




The appearance of trellis can be given more totrers if the laths are positioned diagonally or given variable spacing. If it is attached to a wall, the trellis should be held off the surface so that plants can twine round the laths







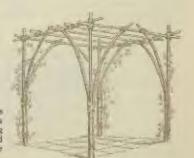
Endless variations in design are possible for screens on which toses or other climbing plants are to grow. These trellises are made of softwood, and should be painted or treated with preservative



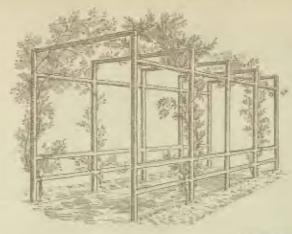
A cantilevered wooden structure provides a canopy over a garden seat and gives a framework on which plants can climb. Flowers grown in the urns and raised beds will also add colour and variety to this terrace, which would serve as an ideal focal point for a large garden.



This dome-shaped shelter is not too disticult for a home handyman to erect if the supports, which consist of three hoops of heavy-gauge rod, and the circular metal strip that holds them in place, are shaped by a blacksmith. The dome can be filled in with lattice work

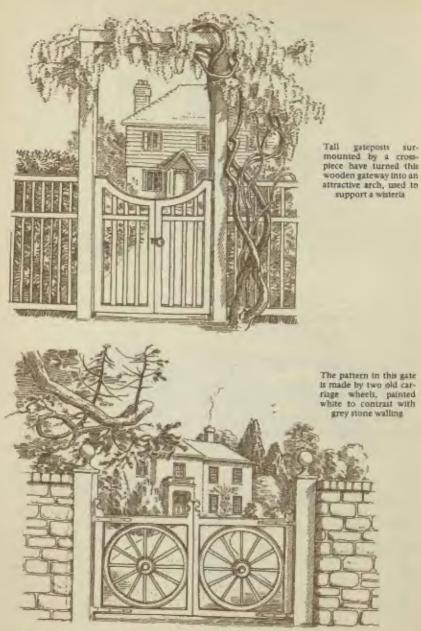


Bamboo held together with cord makes a simple pergola that can be used as a temporary structure for supporting annual climbing plants. As the curved hamboos are under stress, they should be screwed as well as tied in position



A light pergola of soft-wood painted white. To keep it looking trim, repaint the structure each spring before plant growth is too far advanced







A picket gate and fence painted white are particularly suited to a background of evergreem. Both fence and gate are simple to construct

GARDEN GATES

Well-designed gates add much to the appearance of a house and garden. A great variety of designs is available, either simple or fairly complicated and in wood or metal.

Timber gates can be attractive; cedar wood and oak are the most durable woods to use. Wrought-iron gates are light, yet are still very strong.

Many new estates are open-planned, often with gardens having only low boundary walls, and gates would look rather odd when attached to tall pillars or posts that are considerably higher than these walls. Panels of wrought ironwork or wooden fencing can be attached to posts let into the top of the walls. This would avoid the height disparity.

Do-it-yourself gate kits can be bought and easily assembled at home with simple tools. There are kits of wrought-iron gates specially designed to suit every type of garden and home; they can be assembled to suit the width of the gate opening.

Supporting-posts for gates should be set in the ground very securely, as a great deal of strain is placed on them. Hinges should be firmly fixed. Where existing brickwork pillars are used, the usual method is to Rawlplug the screws or bolts into position. If the wall is being built at the same time, use the type of special hinge that has a flat plate or tongue cemented into the brick courses as work proceeds.



BUILDING BRIDGES

Over a garden pool or in a rock garden or other suitable setting, well-designed bridges can look charming. Their construction need not be complicated, although strength is most important.

A bridge should look natural in its surroundings, so try to incorporate a little of the design work and material of the bridge into its surroundings. If, for example, the bridge is covered with crazy paving, insert a few stepping stones of crazy paving in the garden at the immediate approaches to the bridge.

An attractive bridge can be constructed entirely of wood. Make the basic supports of beams at least 6 to 9 in. square, and treat them with a good wood preservative. Stand the ends, which will rest on either bank, in a preservative for at least 24 hours to impregnate the wood thoroughly.

Cut the supports to length (that is, the length of the span plus 4 ft. so that 2 ft. can be let into the bank at each end). The supports can be retained by sinking Rawlbolts of suitable length into a bed of concrete (1 part cement to 4 parts sand).

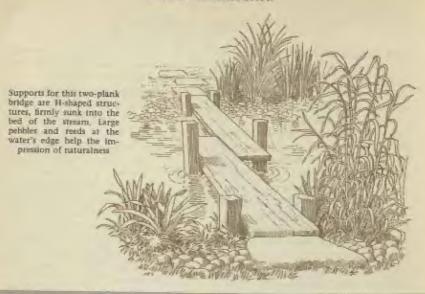
Drill holes in the ends of the supports to take the bolts, and fasten them down securely with washers and nuts.

To surface the bridge, screw 11-in, thick planks on to the beams and at right angles to them. Use brass screws because they will not rust.

A simple handrail can be constructed for this type of bridge. Cut the upright supports for the rail from 3-in. square timber to support the rail at a height of about 3 to 34 ft. above the bridge. Allow sufficient length for them to be bolted through the supporting beams below. Space the supports not less than 3 ft. apart. The top rail should be made from timber 3 in. by 2 in., and the corners carefully planed or sanded smooth.

To provide additional strength to the handrail, bolt or screw a piece of 3-in. square timber into the bottom of the supporting beams underneath the middle of the bridge, to extend 3 ft. beyond each side. Fix a length of timber to the end of this beam and to one of the rail uprights just below the handrail; this will give triangular strength to the structure.







The easiest bridge to construct is the flat type, which is really a supported path. Use angle from, about i to i in, thick and) to + in, wide, as supports. Usually two lengths will be sufficient if the width of the bridge does not exceed) it and the length is not more than 6 if. To build a larger bridge, the number of supports can be increased or thicker and stronger angle iron can be used. Reinforce the banks with plenty of rubble and a layer of concrete ein, thick. A suitable concrete mix for this purpose is I part cement to 6 parts mixed ballast. As this mixture is laid, let the ends of the angle iron supports into the wet concrete and bury them completely, with the angle at the bottom. Take great care to check that the two pieces of angle iron are parallel before the concrete is placed in position; a suitable width will be 24 to 3 ft.

Form the base of the bridge with wire mesh reinforcement, bought from an ironmonger or builder's merchant. A mesh with a thickness of 1 in. is suitable. Cut it to width so that it drops inside the angle irons and rests in the angles. When cutting the length, allow an extra 4 ft. so that s ft. can extend on to each bank.

When the mesh is cut, apply a layer of concrete into the angle of the angle iron supports so that the mesh can be dropped into position and embedded well into this concrete. When this basset thoroughly, say thick brown paper, cut to size, over the mesh and cover it with more concrete, level with the tops of the angles. The paper is to present the

This simple plank bridge is supported in the middle by a length of tree trunk. Added strength is given to the structure by sinking the end supports of the handrail into the banks of the stream; like the centre post, they are also screwed to the plank



concrete falling through the meshes; it will rot away, but not before the concrete has set hard. The mix for the concrete should be a part cement, a parts sand.

Finish off the bridge by smoothing the concrete filling carefully with a trowel. To enhance the appearance, colouring powders may be added to the concrete when it is mixed.

Other materials can be used to give the surface a more natural appearance. Score the coment filling or leave it a little rough to provide a key for the further concrete that will be required for bedding down the surfacing material.

Crazy paving gives a most pleasing appearance (right). First lay the stones loosely on the bridge as a trial; when a good-looking, well-fitting pattern has been arranged, number the stones so that they can be laid easily and quickly in their cement base. Let the stones overlap each side of the bridge by about 1 in_ to hide the angle-iron supports below

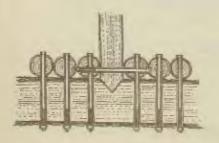
Use the following mix to bed down the tiones, i part cement, a parts sand. Make sure each piece is firmed well into a 1-in. layer of bedding cement, and is level. later cement in all the joints flush with

the tops of the stones.

Using the same laying process, coloured slabs of two or three different fizes can be arranged to form an attractive pattern. Old bricks can be set either on edge or flat, again using a variety of patterns to provide pleasing designs. Pebbles might be used, but it is pethaps wiser to make the beidge a sale treading place, by using flat surfacing material.







A most natural-looking bridge can be constructed of well-seasoned logs. The supporting logs for the bridge should be at least if it in diameter and the logs used for filling in should be at least is in. thick. Secure fastening is essential; the best method is to use long bolts, inserted after the logs have been drilled.



TREE SEATS

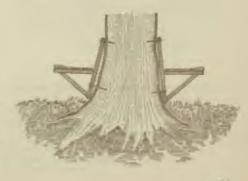
Apart from its charm and usefulness as a resting place in the shade, a tree seat helps to hide what can be an unsightly bare patch at the base of a large tree.

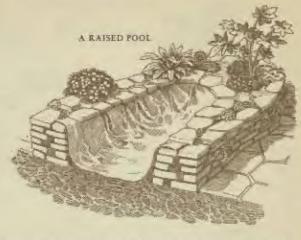
Make the seat level II to 14 ln. from the ground, a height that allows for cushions to be placed on it; the seat should be il to 2 ft. deep, and the back of ft. higher than the seat. Slats of hardwood, treated with preservative, make the best seating surface as they allow rainwater to drain quickly

If the tree seat is to stand on its own legs. a level surface, perhaps paved like a patio, will be necessary. Make the seat in two semicircular sections that can be moved apart as the tree grows. Each semicircle may be composed of three sides of a hexagon or tour sides of an octagon to avoid the necessity for curved wood



if the tree is fully grown, the tree seat framework can be screwed straight on to It with 6-in screws. A hexagonal or octagonal shape is best, and if the seating surface, the back and a stay to the front of the seat make up a triangular shape, the structure will be firm enough not to need legs at the front. When the seat is fixed to the tree in this way, it is unnecessary to level the surrounding ground





Heavy-gauge plastic sheeting makes a pool that can be quickly erected. The stone and earth walls are planted with alpines, and the top row of the inner stone wall hides and holds in place the edges of the transparent sheeting. The plastic stretches a little to take the shape of the earth base beneath it. When the pool needs emptying, the water may be stphoned out

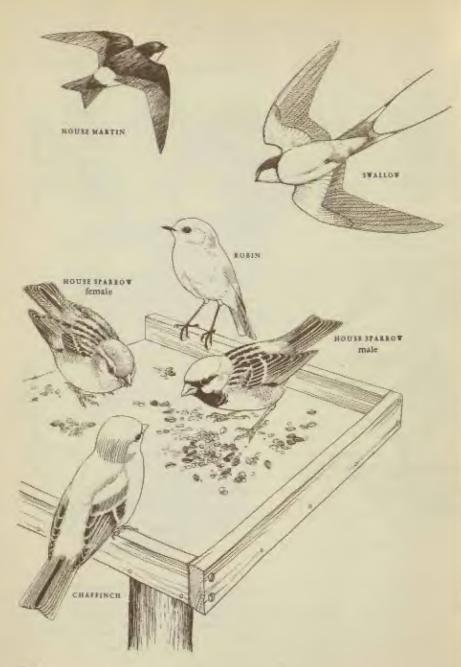
A CONCRETE POOL



This small concrete pool has a deep centre, and side areas at a higher level where shallow-water aquatics may be grown, in a separate waterlight compartment, as electric pump (which will be covered by an edging stone) pumps water from the bottom of the pool through a pipe connected to a decorative fountain standing in the pool

A SUNEEN GARDEN

A very uneven site requiring a great deal of earth-moving is often ideal for the creation of a sunken garden. Here, a sunken rose garden has been made in a symmetrical shape with more paving and walls. A layender hedge round the whole feature gives shelter from the wind. Herbs are planted in the stonework to provide a sweet seem, and spring-flowering trees overlooking the garden add lightness and shade



Animals, Birds and Insects in the Garden

EVERY GARDEN is in its small way a microcosm of the animal kingdom, and to be able to recognize the various creatures it harbours adds greatly to the pleasure of gardening. Some of the animals are, of course, implacable enemies of the gardener, to be exterminated if possible; others remain in peaceful coexistence, feeding upon pests, pollenizing, scavenging or even, as in the case of the earthworm, aerating and improving the soil.

Whether they are friends, neutrals or foes, the discovery of them will depend partly on how much they reveal themselves, though it will depend chiefly on the evidence they leave behind them of having been in the garden.

In the countryside the distribution of wild plants and animals is not so random as may at first appear, for there is generally a close relationship between the type of soil and the plants which thrive on it.

The types of plants and trees which grow in any locality tend to determine the species of insects to be found, and the insect life may have a bearing on the bird and animal life. This close relationship between the various forms of plant and animal life exists naturally in virgin soil,

but is inevitably disturbed when the ground is cultivated.

Some species of animals, birds and insects are extraordinarily adaptable and can live happily in a wide variety of habitats. House sparrows, for instance, will thrive in any place where there are adequate scraps or seeds to support them and holes for them to nest in; and even if there are no suitable nesting holes they will manage quite happily by building ragged grass nests in trees.

Other species may be much more specialized, requiring certain conditions for survival; the lime hawk moth lays its eggs on lime trees and very occasionally on elms, so its distribution is limited by the distribution of its food plants. Swallows and house martins cannot breed in areas where there is no mud available for nest building.

Mature gardens with hodges and trees, shrub gardens and wild and untended corners will be infinitely richer in animal life than well-cared-for plots surrounded by bare fences or by chain mesh. The addition of even a small pond may almost double the variety of creatures to be found, for many different forms of life will colomize it in the course of a few years

MAMMALS

Although mammoths, wolves, bears and woolly rhinoceroses once roamed Britain, today few wild mammals remain and only a handful of them are regular inhabitants of gardens.

With the exception of the squirrel and the hedgehog, which readily become tame, mammals in general have not developed the easy relationship with man which so many birds seem to show. Their presence is much more furtive, often because the gardener cannot meet them on friendly terms. The mole which ruins a favourite lawn or the rabbit which devastates the vegetables must be got rid of, and once an animal has been driven from an area recolonization is a much more precarious and lengthy business than it is with birds or insects.

The position of the garden is therefore a factor which determines the number of mammals that visit it. Those gardens which back on to woods, commons or any other type of open country will be visited by more animals than the small suburban garden, but few gardens are entirely without a mammal of some kind, even if it is only the house mouse.

Because of their retiring ways and nocturnal habits it is easy to be unaware of mammals in the garden. Only the bats, sharing as they do the mobility of birds and insects, seem indifferent to the nature of the garden and on summer evenings may be seen flying over the centre of quite large cities.

MOLES

It is possible to spend a lifetime in the country without seeing a live mole, but there is little chance of one living undetected in the garden, for its handiwork



MOLE

-the mole hill-is unmistakable. The mole is about 6 in. long, with beautiful soft velvety black fur, a long pointed snour, and broad immensely strong forepaws. Its eyes are small and set deep in the fur, but as most of its life is spent underground, sight is of little importance to it. It has, however, an acute sense of smell, much used in hunting. It feeds chiefly on earthworms, which it obtains by endless burrowing operations. The ordinary mole hill is the spoil from the burrows. The nest chamber lies beneath a much bigger hill and is an elaborate structure with several exits. The young are normally born in May or June.



HIDGEHOG

HEDGEHOGS

These small animals are welcome in the garden, as they live mainly on snails, slugs and insects. They feed chiefly by night, lying up during the day, and this routine enables them to live even in the suburbs. They readily become tame enough to feed on bread and milk if it is put out each evening.

The spines of the adult hedgehog are darkish brown with lighter tips, and their underparts are covered in brown fur. Unfortunately their long spines (really modified hairs) frequently harbour many fleas, and a flea powder should be used before they are handled.

The spines of newly-born hedgehogs

are pale and soft and take about three weeks to harden.

Litters number from four to seven and are born in summer, some sows producing two litters a year.

In winter the hedgehog hibernates in a bed of leaves and moss in a hole in a bank or among rocks, under the roots of a tree or even in a little-used building, but occasionally it stirs abroad on particularly mild nights.

SHREWS

Occasionally shrews may visit the garden or be brought in by the cat. Although superficially similar to rodents they are in fact insect-eaters, related to the mole and hedgehog, and are therefore helpful to gardeners. They are very small animals with long tails, flexible pointed snouts and small ears. The body of the pygmy shrew may be only 2½ in. long, and that of the common shrew only 3 to 3½ in. long. They are fierce little bundles of energy, and live at such a pace that they have to feed throughout the whole twenty-four hours of the day.

In colour, they are dark brown above and whitish below.

BATS

These are mammals which have become adapted to true flight by a great exten-



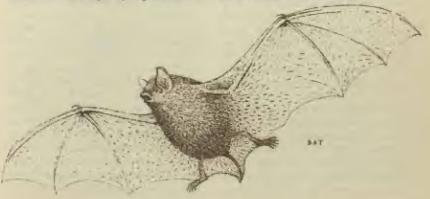
COMMON SELLS

sion of their finger bones and the growth of a leathery membrane connecting the fingers to each other and to the body. They hunt chiefly at twilight and feed on insects which they catch on the wing. They have exceptionally acute hearing and use a system of echo-sounding to navigate with phenomenal accuracy in the dark.

In winter they hibernate in caves, hollow trees and old buildings but may come out in mild weather.

There are twelve species of hat in the British Isles but some of them are very local or rare.

The pipistrelle (wing span & in.), the long-cared (10 in.) and the noctule (15 in.), are the most widely distributed. Identification is, however, difficult as their colour varies with the species and even within the species. They are normally seen as silhouettes in the dusk.





RABBITS

These have become much less common since myxomatosis spread through the country, and although disease-resistant populations are developing, there are still large areas where the animal is rare or even unknown.

But rabbits are very fertile and will certainly survive myxomatosis as a species. The disease is spread by fleas, which, in the crowded conditions of the warrens, pass easily from one animal to another. There is evidence, however, that some animals are now spending their entire lives above the ground and so, for a time at least, are thriving.

In the garden, rabbits are a great menace. If they are abundant in the neighbourhood only an elaborate wirenetting fence sunk well into the ground is likely to keep them out effectively.

SQUIRRELS.

Two species of squirrel can be found in the British Isles—the native red squirrel and the North American grey squirrel which was introduced at the end of the last century.

The grey squirrel frequents deciduous woods, but the red squirrel is most at home in conifer woods and is thus commonestin the north, the west, and in East Anglia, where conifer woods predominate. Where the two species meet the grey squirrel tends to oust its smaller cousin.

Both species are rodents and build bulky nests or drays. These are domed structures of twigs and dead leaves which serve as a home as well as a nursery. Squirrels gather in considerable stores of food because, though they do not hibernate in the winter, they venture abroad less often in periods of severe weather.

ANIMALS, BIRDS AND INSECTS IN THE GARDEN

The coat of the red squirrel varies in colour during the year, and assumes a greyish tinge by the end of the winter. This is due to moults, which occur in May and October, and to bleaching. The tail becomes progressively creamier as the season advances. The pointed hairy ear-tufts are an attractive feature. It lives on nuts, fruit, bark, seeds, fungi and occasionally birds' eggs.

The grey squirrel, frequently known as the tree rat, is light grey in colour and may readily be distinguished from its relative because it has no ear-tufts. It is ruthlessly persecuted in some areas, as it takes young buds, fresh shoots and grain for food. In general, gardeners have little to fear from the grey squirrel although it will raid the bird table.

OTHER RODENTS

Rodents are principally vegetarian and are therefore bound to come into conflict with gardeners. Fortunately, apart from the introduced coypu, British rodents are small, the rat being the largest species



RED SQUIRER



likely to visit a garden. Other probable visitors or residents are the house mouse, the long-tailed field mouse, the bank vole and the field vole.



LONG-TAILED PIELD MOUSE

The first thing to look for in identifying all these small creatures is body shape. Rats and mice have long, pointed noses, long, prehensile tails and big ears. Voles are squatter animals, rather like hamsters, and have round heads, small rounded ears and short, rather suff tails.

The appearance and habits of the house mouse and the brown rat are familiar to most people, and are therefore not described here.

The long-tailed field mouse is much the same size and shape as the house mouse, although its tail is a little shorter, and its ears (which are pink inside compared with grey-brown in the house mouse) are a little larger. It is a warmer brown and is further distinguished

ANIMALS, BIRDS AND INSECTS IN THE GARDEN

by its whitish underparts. It is a most destructive creature in the garden, being especially partial to peas, fruit, bulbs and grain. In winter it readily makes its home in outbuildings or even in the house. In summer it is more likely to be found along the hedge bottom or in similar places.



DANK VOLE

The bank vole and field vole can be distinguished by size, colour and tail length. The bank vole measures about of in. without the tail, the tail adding another of the significant of the significant of the short-tailed vole, also called the short-tailed vole, is slightly bigger, but has a much shorter tail and is a duller, rather mousy brown.

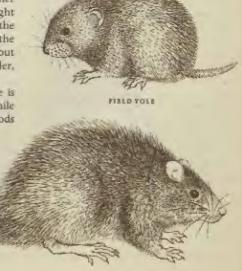
As its name implies, the field vole is more a creature of the open fields while the bank vole is more at home in woods and hedge banks.

KOWN BAT

Both voles will live quite happily in large gardens, where they may do considerable damage, taking leaves, stems, roots, bulbs, fruit and seeds. They make long runs among the roots of grass, and the nests, in which the young are born, are placed on or above the ground. Both species lay in considerable stores of food in their burrows and in winter spend much more time in them. Neither species is found in Ireland.

STOATS AND WEASELS

Both these animals are closely related to ferrets, mink and sable. The stoat, at 12½ to 14 in. long, is appreciably bigger than the weasel (8 to 10 in.) with a proportionately longer, black-tipped tail. Its upper parts are a darker brown than those of the weasel, and its underparts are not so white. Both have long sinuous bodies and are extremely fierce: a weasel can bite right through thick leather gauntlets. In addition they defend themselves by emitting an unpleasant smell.





Both species live in burrows, not necessarily of their own making, and pursue their prey underground.

The weasel takes many small rodents and rabbits for food and so should be welcome in the garden.

Stoats are persecuted by game keepers because of the readiness with which they attack game birds; on occasion they will also enter hen houses.

The stoat bears the fur known as ermine, but it is generally only in the north of Great Britain that it moults into this white winter coat which is of poor quality.

The best ermine comes from abroad.

AMPHIBIA

Amphibians are cold-blooded vertebrates or back-boned animals which occupy a position half-way between the entirely aquatic fish and the terrestrial reptiles and mammals.

They lay their eggs in water, and the young pass through a tadpole stage during which they breathe by means of gills—they would die if left in the air. Later, they develop normal lungs, the gills disappear, and the amphibians take to the land, but even then they must return to the water to breed. Because of this need for water, they are most likely to be found near ponds, ditches or very slow-flowing rivers.

ANIMALS, BIRDS AND INSECTS IN THE GARDEN



COMMON FROG

The amphibians in Great Britain are the common and the edible frog; the common and the natterjack toad; the common or smooth newt, the palmate and the crested newt. There are no edible frogs, toads or crested newts in Ireland. The common frog was introduced there in the 18th century and is now common.

FROG5

The edible frog was introduced from the Continent and is now fairly common in south-east England. As its name suggests, this is the creature which provides the French delicacy "frog's-legs". It may be distinguished from the common frog by the presence of a light green or yellow line down the centre of the back with, usually, a brownish line along either side. A further identifying characteristic is that the top of the thigh is spotted with black and yellow. It measures a little over 4 in. and is slightly larger than the well-known common frog. There is a characteristic hump on the back in both species.



EDINGS PLOG

Frogs will breed in any pool, however temporary, and up to 2,000 eggs are laid by each female every spring. These are small when laid, but quickly absorb water and swell to form a shapeless mass of spawn.

Frogs live on insects, worms and slugs and so it is well worth trying to make the garden attractive to them. A pond is, of course, the surest means of attracting them, but even then a pair may have to be introduced in the first instance. If this is attempted, remember that male frogs are a good deal smaller than the females. In the absence of a pond, frogs will seek patches of long damp grass, rhubarb beds and other moist places where they can shelter from the sun.

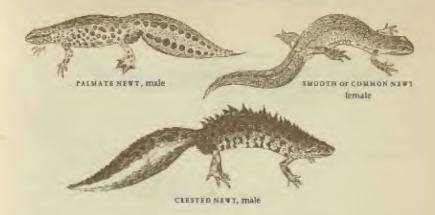




TOADS

Toads may be distinguished from frogs by their dry, warty skin, their flat backs without the hump of the frogs, and their shorter hind legs. They are generally smaller than frogs, males being about 2½ in., females 3½ in., and very occasionally even 4½ in. The natterjack toad, which does not exceed 3 in, in either sex, has a

ANIMALS, BIRDS AND INSECTS IN THE GARDEN



thin yellow line down the centre of the back. It runs rather than hops and calls loudly during April, May and June.

Toads prefer deeper, more permanent water for breeding than frogs and will travel several miles across difficult country to a favoured site. Their spawn is laid in long strings.

Like frogs, toads are entirely beneficial in the garden, living on caterpillars, slugs, woodlice, millipedes and insects. They feed at dusk and like to spend the day in the shade of a plant, frequently achieving remarkable camouflage by scooping out a shallow hole in the soil so that their rough backs blend with the surrounding earth.

NEWTS

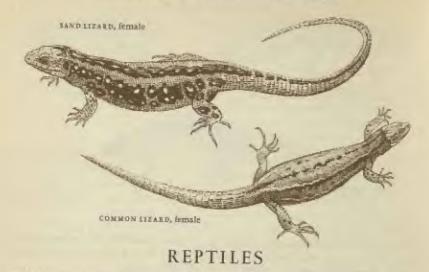
In appearance newts resemble small lizards. They are much more aquatic than frogs or toads, spending most of the spring and summer in the water. When they finally leave their breeding pool in the autumn, they do not wander very far away; after a brief while they seek a hole or crevice near the water and hibernate until the spring. This means they are unlikely to be found in gardens that have no pond near by. If they are introduced to a garden pond it is necessary

to make sure that no overhanging lip prevents them from leaving the water when they wish.

Newts lay their eggs singly, attaching them to the leaves of water plants, and it is easy to overlook their presence as there is no conspicuous mass of spawn to identify them.

Like frogs and toads, newts are insectivorous and an asset to the garden.

During the breeding season the males have bright orange underparts and develop crests, but do not assume that a newt with a crest is necessarily a crested news, which is the largest of the three newt species. The crested newt grows to 6 in, and both sexes have big serrated crests running down the centres of their backs. The common or smooth newt reaches 3 to 4 in, and the palmate newt is slightly smaller. The palmate is socalled because in spring the hind feet of the male are webbed, But it is safer to recognize it by the rather square-cut appearance of the tail, from which projects a black central thread, as this feature remains throughout the year, whereas the webs on the hind feet are much reduced by the time the animal leaves the water after the breeding season.



Like the amphibians, reptiles are coldblooded; that is, they do not maintain a constant body temperature but take on that of their surroundings. They are most active in warm weather and become increasingly lethargic as the temperature drops, until, in cold weather, they become completely torpid. They are able to hibernate through long winters, the viper or adder being found nearly as far north as the Arctic Circle. There are no snakes in Ireland.

The reptiles to be found in Great Britain are three species of snake—the grass snake, the adder and the smooth snake; two lizards—the common and the sand lizard; and the slow worm which looks like a snake but is really a legless lizard.

Young reptiles hatch out from eggs which are not incubated by the parent. The fertilized eggs of the adder, smooth snake, common lizard and slow worm are retained within the body of the female until they are just about to hatch, and the young are therefore born alive. The eggs of the other British reptiles are

hatched by the heat of the sun and the warmth generated by decaying vegetation. For this reason a compost heap is sometimes a special source of attraction.

Most reptiles prefer fairly dry conditions and are often associated with heathland. The grass snake, which is fairly catholic in its choice of habitat, is the species most likely to be found, but none of the reptiles is common in gardens, and the smooth snake is very rare, being confined to a few areas in southern England.

SNAKES

The snakes of the British Isles live on a variety of food including small rodents, frogs, toads, newts, lizards, insects and occasionally small birds. They like good ground cover but on sunny days may bask in exposed places.

The graxs snake is long and tapering, the females (which are bigger than the males) frequently reaching 4 ft. and occasionally 5 ft. It has black spots along its back and bars along its sides, and normally there are two distinctive yellow patches placed symmetrically just behind

the head though these may be missing in old females. It is an excellent swimmer and in summer may spend much time hunting in the water.

The adder is much shorter and thickset, with a rather short, blunt tail, a broad flat head, and a very distinctive dark zigzag line down the centre of its back. It is the only poisonous snake in Great Britain, its bite being fatal to dogs and occasionally to human beings. Fortunately, it very rarely attacks unless provoked.

LIZARDS

These small reptiles move with great rapidity, especially in warm weather, and can climb rocks and walls with ease, Unlike snakes, they have eyelids.

The common lizard is 5 or 6 in. long and is the only species likely to visit the garden. The underparts of the male are orange or red, dotted with black: the female is paler, with grey spots or is even unmarked. It feeds mainly on insects, caterpillars and spiders, and is most likely to be found on hedge banks, dry stone walls and in rock gardens.

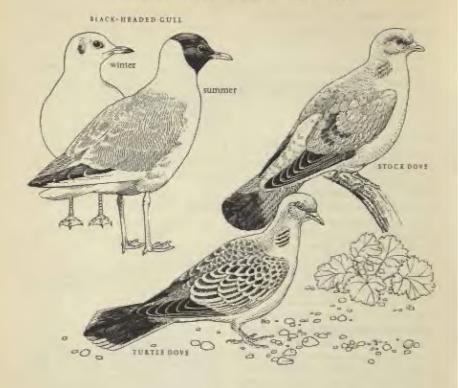
The larger sand lizard, 8 in. long, is rare, being confined to sandy parts of Surrey, Hampshire, Dorset and the coast of Lancashire. It is purple-brown with broken bands of a darker tint, but the colour is very variable and the males tend to have a green diffusion. There are rows of dark and white spots along the

ADDED

back flanks and tall. Its food is much the same as that of the common lizard.

The slow worm, also known as the blind worm, is bronze in colour, slender, and is seldom more than 13 in. long. Like other lizards it has eyelids. It feeds on slugs, insects and worms and spends much of its time hiding away under large stones (the rocks in rock gardens attract it), fallen trees, sheets of corrugated iron and so on. If it is trapped by its tail the slow worm will readily shed it, later growing a new, but blunter one.





BIRDS

Birds, with their incessant movement, charming habits and gay song, are a constant source of delight in the garden, and will often make it their home. In the migration season, even casual visitors can be attracted to the garden in search of food and water.

FOOD AND WATER

An elaborate bird table is not necessary, for some of the shyer species prefer to feed from the ground. But if food is put out it is important to see that there is no place near by where a cat can lurk in wait for an unsuspecting victim. Pieces of fat hung from trees are a safe source of

food for the tit family. Finely chopped fat and other scraps are welcomed by most birds, as well as peanuts and seeds, which can be placed in holes made in the tops of posts. A small patch of chickweed or groundsel will soon be found by greenfinches and linnets. A clump of teasel at the end of a herbaceous border will not only look attractive but will tempt goldfinches. Berry-bearing shrubs and trees, such as holly, rowan, hawthorn and pyracantha, can make the difference between life and death for birds in severe weather conditions.

Water is important both for drinking and bathing. An elaborate bird bath is not essential, but if birds are going to bathe as well as drink, the water should not be more than an inch or two deep. An old dustbin lid let flush into the ground makes an excellent bath. It is particularly important to see that water is available in frosty weather when natural sources may be iced over.

NESTING

Birds like mature gardens, for a bare plot of annuals with few herbaceous plants or trees offers neither nest site nor shelter. Shrubs, hedges, fruit bushes, creepers and trees all provide places where the birds can take refuge when alarmed, or can roost at night, as well as providing opportunities for nest building. On the whole, natural sites are more important than nest boxes, so before cutting hedges in the breeding season it is as well to check that no bird is nesting behind the leafy cover. Nest boxes should be erected in north-facing or shaded positions to prevent the young from being baked by the sun. Sites between 4 ft, and 10 ft, high are preferable. Robins and spotted flycatchers like boxes with only the lower half of the front boarded. For tits the whole front should be closed in and an entrance hole of about 14 in. In diameter made. If the hole is bigger, house sparrows are likely to commandeer the box. The inside should be about 4 in. by 4 in. with a depth of not less than 5 in. A removable lid will enable the box to be cleaned out at the end of the season. Tits often roost in nest boxes all winter so leave the boxes out all the year round.

HINTS ON IDENTIFICATION

All identification is, initially, a process of narrowing down the field, whether it is to name one insect from a possible 20,000 or one bird from the 450 or so which have been recorded in the British Isles. The first step is to try to recognize the group to which a bird belongs. Thus, as soon as it has been decided that a bird is an owl, the field has been narrowed down to about half a dozen species.

BILLS OR BEAKS

Often the shape of the bill is an important clue. A slender beak is an indication that the bird is an insect eater and uses its beak as a delicate pair of forceps. On the other hand, birds such as swallows, swifts and flycatchers, which catch their insects on the wing, have short, broad beaks which open wide and make it easier for them to scoop up their prey while flying at speed.

Woodpeckers have stout beaks with chisel-like ends to enable them to bore through the bark of trees for the insects lurking beneath, but a brown and white little bird called the treecreeper, which also seeks its food on tree trunks, has a long slender down-curved beak for probing into crevices.



Nearly all flesh-eating birds, whether they hunt their prey or seek for carrion, have hooked beaks to help them to tear their food. Hawks, owls, and the larger rapacious gulls have beaks of this kind.

Many birds have beaks adapted to seed eating. These beaks are stout and conical to enable the birds to crush the seeds, but may be quite small as in the linnet, long and sharp-pointed as in the goldfinch which feeds especially on thistles and teasel seeds, or massive nut-crackers, capable of exerting a force of 100 lb., as in the rarest of our British finches—the hawfinch.

But many species such as the starling and blackbird have general-purpose bills, not adapted to one particular method of feeding, and in these birds other features must be studied for clues as to their identity.

SIZE, MARKING, SONG, ETC.

It is always important to note the size very carefully, comparing it, if possible, with some familiar species-e.g. "a little smaller than a sparrow and more slender". Generally speaking, it is fairly easy to settle to which family a bird belongs, and careful observation then enables one to eliminate the various species comprising the family until the final identification is possible. Key features to examine are head, wings and tail. Is there a pale or dark line through or over the eye? Are there white or coloured bars on the wings? Is the tail long, medium or short, square or rounded, uniformly coloured or with pale outer edges? Song or call notes may be helpful, and behaviour is often very important. Does the bird hop or walk? Does it flick its wings, wag its tail, spend its time on the ground or keep to the bushes? Remember that in many species the male may be so much more brightly coloured than the female that at first glance one

could suppose them to be different species. And juveniles may look quite unlike their parents. A young robin, for example, has a freekled brown breast without any trace of red and looks more like a miniature thrush.

FAMILIES AND SPECIES

GULLS

Gulls are never garden birds, but some are common inland outside the breeding season and, especially in winter, will land on lawns to feed.

The bird most frequently recorded is the black-headed gull. It is fairly small for a gull (about 15 in.), and slender, with reddish legs and beak and a distinctive white forward edge to the wing. In winter the head is white, with only a small black smudge behind the eyes, which grows larger as winter advances until, by early spring, the whole head is dark brown.

The common gull—which is not so common—is a little larger (16 in.), more thick-set, and has yellowish legs and beak.

PIGEONS

The woodpigeon is the common pigeon of the garden and the poulterer's shop. It is a big, plump bird some 16 in. long, with iridescent patches of green and purple on the neck, and beneath these a small white patch on either side. A broad white bar across each wing is very conspicuous in flight. The song sounds as though the bird is saying "take two cows Taffy".

The stock dove is less common, a little smaller (13 in.), rather darker, and lacks the white on neck and wing.

The beautiful little turtle dove (II in.) has a fan-shaped tail with white tips to each feather. Its purring song—"the voice of the turtle" mentioned in the Song of Solomon—is one of the characteristic sounds of summer in the woodlands of southern England.



WOODFECKERS

Three woodpeckers breed in Britain, the green, the great spotted and the lesser spotted, and all occur in gardens from time to time.

The great spotted woodpecker is the one most commonly seen, sometimes visiting bird tables for food. It is about the size of a starling (9 in.), black and white, with a vivid white patch on the wings and crimson under the tail. The male has a small crimson patch at the back of the head. In juveniles the entire crown is crimson.

The rarer lesser spotted woodpecker is about the size of a sparrow and has no crimson under the tail. The wings are barred black and white, but there is no large patch of white as in the great spotted woodpecker. The crown of the male is red. In spring these two woodpeckers "drum" by hammering rapidly on resonant dead branches with their beaks. This is a mating call, the equivalent of song, and not a searching for food.

The green woodpecker is over 12 in. long and much larger than the other two. Its back is a dull green, shading almost to yellow on the rump, and the crown is crimson. It is particularly partial to ants and spends much time on the ground searching for them. Its loud laughing call has given it the name of yaffle.

SWIFTS, SWALLOWS AND MARTINS

The swift (61 in.) is the largest of this group, it is very dark brown with a small patch of white beneath the chin. The

ANIMALS, BIRDS AND INSECTS IN THE GARDEN

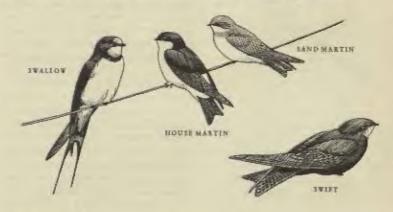


wings are very long and narrow. In summer the birds chase each other high in the sky, screaming shrilly. They do not perch on roofs, telephone wires, etc., and generally swoop straight into the nest hole in the roof.

Although the swallow measures 74 in. and is thus longer than the swift, much of this length is accounted for by its long, deeply forked tail and it is noticeably smaller in the body than the swift. It is a glossy, blue-black above with dark reddish throat and has a musical twittering song. It builds a shallow cup-shaped nest

CROWS

Five species of the crow family may be seen fairly regularly in gardens. Two of them, the magpie and the jay, are so strikingly coloured that they are unlikely to be mistaken for anything else. Seen from a distance, the magpie appears to be a black bird with a white belly and a vivid patch of white on each wing. It is only on closer view that the beautiful tridescent blue and green in the wings and tail become apparent. The tail is exceedingly long and rounded, giving the bird a total length of 18 in.



of mud and straw, usually in a building and resting on top of a beam or ledge.

The house martin is 5 in. long, has a forked tail but no long tail "streamers", a white throat, breast and belly, and a very conspicuous band of white across the rump. Its mud nest is cemented to a wall, just beneath the roof, and instead of being a shallow cup like the swallow's, is built right up to the eaves, with only a small entrance. Sand martins measure about 4½ in. and are appreciably smaller on the wing. They are a medium brown above and white below and lack both the long tail streamers of the swallow and the white rump of the house martin.

The jay measures about 13 in. from beak to tail, but is not so much smaller than the magpie as the measurements would suggest, for its tail is much shorter. It is a beautiful pink bird with a white rump and a bright patch of blue barred with black in each wing. Normally it is very shy, more often heard than seen, but in recent years the jays near London have become bolder and may even be seen searching waste-paper-baskets in the city parks in their quest for food. The note is a loud harsh scold—"skaark".

The jackdaw is common about old houses and churches and frequently nests in chimneys. It is much the same size

ANIMALS, BIRDS AND INSECTS IN THE GARDEN MARSH TIT GASATITIT LONG-TAILED TIT

and build as the Jay but uniformly black save for a greyish patch on the nape. Its pale blue-grey eyes are also a distinctive feature.

The carrion crow and rook are much bigger birds, measuring about 18 in. from beak to tail, and at first it is difficult to distinguish between them. The distinctive features of the rook are a bare greyish-white patch on the face, round the hase of the hill and a shaggy appearance to the feathered part of the leg. The feathers on the leg of the carrion crow are much smoother and trummer, the face lacks the grey bald patch round the bill and, because it is a flesh eater, the bill is a trifle more stout-less dagger-like, Unfortunately young rooks do not have the bald face patch and this can cause some confusion in summer.

After a time it is possible to tell the notes of the two species apart, though the rook has a very varied vocabulary. The call of the carrion crow may be written "kraak"-a harsh, somewhat nasal note repeated several times. The rook's note is generally set down as "caw", but remember that there are many variations. An old gamekeeper once explained the difference by saying that the rook's note was "caw", but the crow says

"perk"-because he is fond of a bit of meat-quite a good way of remembering the difference.

TITS

Although most people are able to recognize a tit as such there is sometimes confusion in separating the various species. Only two are really common in gardens-the great tit and the blue tit.

The great tit, as its name suggests, is the largest of the tit family. It is 34 in. long, and yellow below with a broad, intense black line running down the chest from the throat to between the legs. The head is glossy black with a pale (not white) patch on the nape, the back greenish, shading to a grey blue on the wings.

The blue tit is an inch smaller and Is the only tit to have bright blue head, wings and tail.

Slightly smaller than the blue tit is the less common coal tit (44 in.), which Is best identified by a large squarish white patch on the back of its head.

Two other less common tits, looking like the coal tit, but lacking the white patch, are the marsh and willow tits. These are much more difficult to tell apart, the best distinguishing feature being perhaps the note. The marsh tit's note may be written "piches", and the

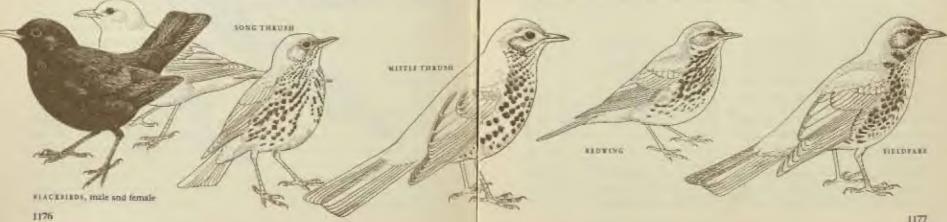
nasal note of the willow tit "chary".

There is also the long-tailed tit-a dainty little ball of pink, black and white, with a very long tail accounting for 3 in. of its total length of 53 in.

This tiny brown bird which measures only 3] in, is a distinct personality in the garden. His short tail is permanently cocked up behind him and his trilling song is so loud one can scarcely believe it comes from so small a body. The cock builds several domed nests each spring, often in ivy, but only one of them is taken over and lined by the female.

This group includes the song thrush and the mistle thrush, the blackbird, two beautiful winter visitors-the redwing and fieldfare-and the related but much smaller robin. Their main food is insects. but they also eat fruit of various kinds. Their bills are slender but fairly strong. Their gait is normally a hop but they do occasionally run. They are among our most beautiful songsters.

The blackbird is the commonest of the group and is about 10 in. long. The cock is unmistakable, being black all over with an orange beak and a ring of orange skin round his eye. The hen is brown all over,



the brown of the breast being mottled and often having a slight reddish tinge. Her bill is normally brown but may show traces of dull orange. The young are a warmer brown than the female and freckled on the breast, so that they can sometimes be mistaken for thrushes.

The song thrush is an inch smaller than the blackbird and more slightly built. It has uniform brown upper parts and is creamy-buff below, marked with small spots or dashes. Its song may be told from that of the blackbird by being less varied, with phrases repeated two to four times.

The mistle thrush (10½ in.) is bigger than both the song thrush and the blackbird, its back is a greyer brown than that of the song thrush and the underparts are more boldly marked with big, rounded spots. The juveniles are paler and mottled above. The mistle thrush is aggressive, often driving other species from the bird table. The fieldfare, one of the winter visitors (10 in.), has slate grey head and rump, and a chestnut back; the breast is suffused with a warm rusty-brown.

The other winter visitor, the redwing (8½ in.), is like a small song thrush, but with a pronounced creamy-white stripe over the eyes and, on the sides, a rich chestnut-red which is frequently almost hidden by the folded wings.

The adult robin (5\frac{1}{2}\text{ in.}) is light brown above, with bright orange forehead, throat and breast bordered with pale grey; it is important to remember that the young are speckled like small thrushes. Their breasts start to become red when they are two to three months old and for a while they are strange, parti-coloured little creatures.

WARBIERS

Warblers are a difficult group requiring care in distinguishing one member from another. In all but the larger gardens they are likely to be migrants, pausing for a day or two on their journey. Without song, identification may prove difficult. They are dainty, active little birds with very slender beaks and prefer fairly thick cover. As they pass through in the autumn they may be found searching for aphids among the rows of peas. The three most likely to turn up are the willow warbler, the chiffchaff and the whitethroat.

The willow warbler (41 in.) has an olive-brown back with creamy-yellow underparts and is slightly yellower than the chiffchaff, although in autumn this character is not reliable. It has light brown legs but the song is the most helpful feature to note. The willow warbler has a silvery little descending song ending with a flourish.

The chiffchaff (44 in.), also with an olive-brown back and creamy-yellow underparts, usually has dark brown legs, but this distinction is not always reliable. It sings its own name—a varied pattern of "chiffs" and "chaffs" . . . "chiff chiff chaff chiff chaff chiff" etc.

The whitethroat is appreciably bigger than the willow warbler and chiffchaff. It has a pure white throat and is sandy coloured on the wings. The male has a grey head; in the female and young male the head is the same shade of brown as the back. The whitethroat's note is a scolding "char" which it delivers while well concealed in the vegetation. Its song is hurried and scratchy.

SPOTTED FLYCATCHER

This summer visitor is quite a common garden bird, even occupying large town gardens. It has a mousy brown back and white breast faintly streaked with brown. Its most noticeable characteristics, however, are the very upright position in which it sits and its habit of swooping out to catch flies, returning to the same perch a number of times.



DUNNOCK OF HEDGE SPARROW

DUNNOCK OR HEDGE SPARROW

This is a quiet, unobtrusive little brown bird (5] in.), rather sparrow-like but with a slender, sharp-pointed bill, a grey breast and the habit of frequently flicking its wings. It spends much of its time on the ground and may be reluctant to visit the bird table. Its song is a hurried jingly warble rather similar to the wren's but not so loud.

WAGTALLS

Three species of wagtail breed in the British Isles but only the pied wagtail (7 in.) is in any way a garden bird. It is a black and white bird, with a very long tail which is for ever dipping up and down as it runs in search of food. The winter plumage is drabber. The young ones have grey backs and are much less boldly marked, their appearance being rather smutty.

STABLING

From a distance the starling (6½ in.) appears to be black, but a closer view reveals iridescent purples and greens in the adult birds, while in early winter the whole plumage is heavily flecked with a golden-brown. The bill is yellow in the breeding season, blackish at other times of the year. The yellow may start to

ANIMALS, BIRDS AND INSECTS IN THE GARDEN



appear as early as December; by July or August it will have disappeared again. Juveniles, which are usually very noisy, are a mousy brown, but they start moulting out of this plumage when only about two months old, darker feathers with pale tips slowly replacing the brown. The head is the last part to moult. Starlings in partial moult may be difficult to identify, but they have short tails and they always walk instead of hopping. The starling is a great mimic and its cheerful, wheezy song may include snatches of the songs of other birds. FINCHES AND STARROWS

With the exception of the goldfinch and the tree sparrow, the females in this group are plainer than the males. They all have short, stout, rather conical bills although there is a good deal of variation from one species to another.

The male greenfinch (5) in.) has a dull green back with rather yellowish underparts, and bright yellow in the wings and at the base of the tail. The beak is horn coloured.

The chaffinch (6 in.) is rather longer but less thick-set than the greenfinch. The cock is a strikingly handsome bird in the breeding season, with a blue-grey head, a rosy-pink breast, a chestnut back and a greenish rump. Two bold white bars in the wing help to distinguish both the male and the female. Its song has been rendered as "chip chip chip tell tell cherry erry erry tusi chewee", and no words could get nearer to it than this.

The bullfinch (5] in.) is bulky, like the greenfinch. The cock has a bright rosy breast (brighter than the chaffinch's), black head, wings and tail, a grey back and a conspicuous white rump. The beak

is short, black and enormously stout. It is a shy, retiring bird and often reveals its presence only by a soft clear call note which might be rendered as "peer".

The linnet (5½ in.) is easiest to recognize in summer when the red forehead and breast of the male are unobscured by brown tips. The head is greyish, the back a chestnut-brown, and the forked tail and wings are fringed with white. The female never develops the red, and both the female and the juvenile have rather streaky breasts. The twittering song is agreeable and varied, and in the past linnets were very popular as cage birds.

The goldfinch (4) in.) has also a long history as a cage bird, both on account of its handsome appearance and its cheerful, liquid twitter. The face is scarlet with dull white cheeks and the top of the head black; the wings are black and vivid yellow, the rump white. It is impossible to confuse the goldfinch with any other species. It frequently nests in apple, pear and horse chestnut trees, usually in the top fork, and is not uncommoningardens in southern England.

The house sparrow is 53 in, long. The male has dark brown upper parts, streaked with buff, a dark grey crown which is brown at the sides, white cheeks and underparts, and a black bib which is much reduced in winter. The female and juvenile are a paler brown, and lack both the bib and the grey on the crown.

The tree sparrow (5½ in.) is a smaller, neater, much less evenly distributed relative of the house sparrow. It resembles a cock house sparrow, but the entire crown is chocolate-brown and there is a small black patch on the whitish cheeks. The sexes are alike.

INSECTS

The host of creeping, crawling, burrowing, swimming and flying creatures known loosely as insects are so numerous and varied that zoologists divide them, on the basis of relationships, into smaller units to narrow their field and facilitate identification. Nearly all the small creatures to be found in a garden belong to one of three great groups:

Amelida (or ringed worms), which include earthworms, and many of the marine worms.

Mollisca (or "soft-bodied ones"), which include slugs and snails, as well as cockles, oysters, winkles and other shellfish.

Arthropoda (the "jointed-leg" creatures), the group to which most of the small garden creatures belong. This group is so vast that it has been divided and subdivided in order to get it down to really manageable units, It is divided into four main classes: 1, the Crustaceo, which include crabs, shrimps, lobsters and the hump-backed little woodlice and slaters found in gardens; 2, the Arachnida, which include spiders, harvestmen and mites, all having four pairs of legs; 3, the Myriapoda, or "many-legged" creatures, which include the centipedes (literally "hundred-footed ones"), millipedes, etc., and 4, the Insects, or true insects.

ANNELIDA

WORMS.

Earthworms are familiar to most people. They feed on vegetable matter, and draw considerable quantities of grass and leaves below ground. They also break up and aerate the soil by their movements. They are thus very beneficial in gardens, although their casts can be a nuisance on a lawn.

Moisture is essential to them so that

in dry weather they burrow deeper. In water-logged ground, however, there is a danger of their drowning. Worms are hermaphrodites, that is, each individual is both male and female.

MOLLUSCA

SLUGS AND SNAILS

These feed on vegetation. They prefer damp places—old walls, rotting logs, deep grass—and avoid the heat of the day as much as possible. Because of their protective shells (which are a familiar sight) some species of snail are able to withstand long periods of drought. Many wild plants have developed protective devices, such as hairy leaves and stems, against slugs and snails, but unfortunately most garden plants, particularly the more succulent vegetables, have no such protection and are frequently devastated.

ARTHROPODA

CRUSTACEA
WOODLICE AND SLATERS

Both are about ½ to ¾ in. long and look alike, but an easy way of telling them apart is that the woodlice curl into a ball when touched and the slaters do not. They are grey or brownish creatures with oval, armour-plated bodies. They are frequently found in decaying wood, especially under the bark, and also under stones. They eat stems, leaves and roots of certain plants and can be a pest in frames and greenhouses.

ARACHNIDA SPIDERS AND HARVESTMEN

Both have eight legs but there the similarity ends, for in the harvestmen the head, thorax and abdomen are united in a single, undivided body, but in spiders they are separate, with a distinctive narrow waist between the thorax and abdomen.

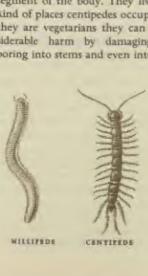
Spiders feed on flies and other small insects. Many spin webs to catch their prey, the web of the common cross or garden spider being particularly beautiful. Others stalk their prey. Some live in burrows, and one species even lives under water, breathing from a bubble of air trapped in a domed web,

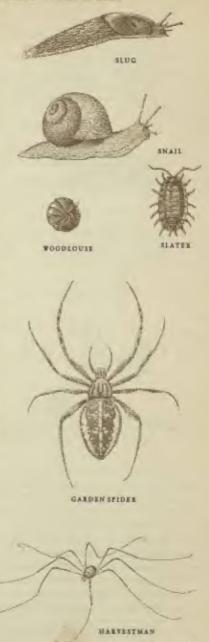
Harvestmen are omnivorous, and have claws for tearing food. They hide by day, and lay their eggs underground.

MYRIAPODA CENTIPEDES

These are usually brownish in colour, with flattened bodies, long antennae and only one pair of legs to each segment of the body (of which there may be as many as 173). They live in dark, damp places, under stones, in walls, decaying vegetation, etc., and are generally beneficial to gardeners as they live on insect larvae, slugs and snails, though they also eat small worms and smaller centipedes.

Most species of millipedes have tubular bodies and are distinguished from centipedes by having two pairs of legs to each segment of the body. They live in the kind of places centipedes occupy, but as they are vegetarians they can do considerable harm by damaging roots, boring into stems and even into fruit.







GREAT GREEN GRASSHOFFER, female



INSECTA

A true insect in the adult stage has a body divided into three parts, head, thorax or chest, and abdomen. It has three pairs of legs attached to the thorax, one pair of antennae or feelers, and usually wings, though these may be tucked out of sight beneath hard wing cases, as in the case of the ladybird and other beetles.

Some million different species of insects (in the zoologist's sense of the word) have been discovered all over the world and named. There are 20,000 in the British Isles alone, and they are divided into II still smaller categories, called "orders", which may be quite small, or bewilderingly large.

There are, for example, only five British species of earwig (order demapters) but over 6,000 British species of Hymenoptans—the order to which bees, wasps and ants belong. And even within the species themselves a creature may exist in four or five different forms at different stages of its life: eggs, larva or caterpillar, pupa or chrysalis, and adult—in which final stage the male and the female may be so dissimilar as to seem quite unrelated,

The following insects are more frequently noticeable in the garden.

GRASSHOFFERS.

These are divided into two groups, shorthorns and long-horns, depending on the length of the antennae.

The short-horns are the common grasshoppers of the British Isles. They live chiefly in long grass and are vegetarians. Their chirping song, known as stridulation, is made by rubbing the hind leg against the wing.

There are 14 species, and these vary in colour, though basically they are shades of green and light brown. As their colouring is disruptive they are able to merge into their background. They measure up to 1½ in., though the size varies with the species.

Long-horn grasshoppers are found chiefly south of the Thames. Largely arboreal, they are omnivorous, eating young buds as well as many insects, including other grasshoppers. They stridulate by rubbing their forewings together. The great green grasshopper is the largest species. The females are up to 2½ in. long, and the males are a little shorter.

British grasshoppers do little harm and need not be feared in the garden. EARWIGS.

Contrary to popular belief, it is probable that earwigs do little harm and even a certain amount of good. They are omnivorous—eating insect larvae as well as decaying vegetation—but are mainly nocturnal in their feeding and prefer to spend the day in some crevice or hole. Flowers often provide them with this shelter, as do the hollow stems of such plants as lupins and delphiniums. When fully grown, the common earwigs are about 1 in. long, with glossy reddishbrown head and pincers, a darker brown abdomen and light brown legs.

DRAGON-FLIES AND DAMSEL-FLIES

Dragon-flies, of which there are 43 species in Britain, are large, swift-flying carnivorous insects which pursue their prey on the wing. The length of their bodies is between 1½ and 3 in. Damsel-flies are smaller, with a weaker, more fluttering flight. Both are most brightly coloured, being brilliant red, turquoise, green, yellow, black, etc.

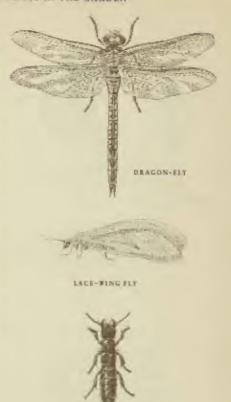
The larvae of both live under water and in the adult stage it is normally only the powerful dragon-flies that venture far from the water.

The beautiful colours of both dragonflies and damsel-flies add to the charm of a garden pool. They both have strong jaws for eating their victims, but neither of them sting.

APRILLS

All kinds are alarmingly prolific. See also Garden Pests, It has been calculated that, but for the host of insects and birds which prey on them, the progeny of a single greenly would destroy their food plant throughout the world in the course of two or three years.

The life cycle of greenflies is remarkable. During the summer there are only females, and these produce other females by parthenogenesis or virgin birth. Some of these offspring are wingless and remain



DEVIL'S COACH-HOLLE BELTT!

on the plant on which they were born; others are fully winged and fly off to establish new colonies. Males are born in late autumn, when mating takes place. The species survives the winter only in the egg stage.

LACE-WING FLIES

These are about \(\frac{1}{2}\) in, long and are fragile creatures with delicate transparent wings. The green lace-wing, with pale green wings and body and large bronze eyes, should be examined through a magnifying-glass for its full beauty to be seen.



VIOLET GROUND SEETLE



COCECHAPER BESTLE



ASPARAGUS BEETLE COLORADO SENTER

It is quite common in gardens, where it consumes large quantities of aphids.

BEETLES

There are 3,690 species of British beetle. Their forewings have become hard (usually horny) sheaths, which meet in a straight line down the back and are lifted in flight, though not all beetles are capable of flight. The softer hind wings are folded beneath the sheaths. Their mouth parts are robust for biting and chewing.

The devil's coach-horse or cock-tail beetle frequents rank vegetation and 1186 middens, preying largely on insects. It carries its tail turned up, like a scorpion, and appears to be dangerous but is actually harmless and even beneficial in the garden.

The violet ground beetle, about 1 in.
long, is a very common garden beetle.
It is black with a purplish sheen. It has a
long oval body and long legs, and is a
swift-runner, although it spends most of
the day hiding under vegetation or in the
soil, and generally runs across the path
only when disturbed by gardening
operations. It is carnivorous and destroys
the harmful larvae of various moths.

The dor beetle, up to 1 in. long, is one of the heavy-weights of the British beetle world. It is black with iridescent purple and blue beneath. It lives on dung which it rolls into a ball and buries at anything up to a foot below the ground. It buries far more than it requires, and so has a beneficial effect in putting the manure where it can do most good. It tiles by night, especially in late summer evenings, and if it falls on its back after colliding with something it has the greatest difficulty in righting itself.

The cockchafer beetle, up to about t in. long, is a brownish colour and flies chiefly at dusk. It is distinctly harmful to the farmer and gardener as it feeds on the leaves of trees, especially oak and chestnut. The larvae remain below ground for as long as four years, feeding on roots of grasses and damaging the roots of young trees.

Leaf beetles are a group of small and generally brightly coloured beetles whose larvae may do great harm. Species of particular menace to the gardener are the colorado beetle, which is ladybird-shaped and yellowish-orange with black longitudinal stripes on the wing cases, and the asparagus beetle, which is longer

and narrower and greenish-black with six orange spots on the wing cases.

Ladybirds, of which there are about 50 species, are often named after the number of spots they have on their backs. They are chiefly red with black spots, though the twenty-two-spot is yellow. The two-spot and the seven-spot are among the most common. Their larvae do an immense amount of good, living principally on aphids.

Wireworms, the larvae of click beetles, do a great deal of harm to crops, but birds, particularly starlings and rooks, destroy countless thousands of them. For their full description, see Garden Pests.

ANTS, BEES, WASPS AND ICHNEUMON FLIES

These are of the order Hymenoptera (Membrane-wing). There are over 6,100 species in this order, some of them having great economic importance.

There are 36 species of ant in the British Isles, several of which occur in gardens. British ants are all vegetarians, taking nectar, seed juice, fruit and, in particular, the sweet exudation from greenfly known as honeydew. Ants are colonial, and big nests, especially those in secure positions such as under concrete footpaths, may last almost indefinitely. There are records of ant colonies 80 years old. They cause little trouble except when they swarm, usually during sultry weather in late summer, or when they enter the house.

Bees, of which there are 240 species of varying sizes in Britain, are divided into the social, which includes the hive bee and the bumble bee, and the solitary, which are the majority. They all depend on flowering plants for nectar and pollen. Social bees care for their young and these, in turn, care for the next generation in the colony.





Female solitary bees leave a supply of food in each cell, lay an egg on top and seal it up.

Most species of bumble bee (there are 25 species in Britain all about ½ to ½ in. long) live below ground, colonies usually being very small and rarely exceeding 300 to 400. The queen alone survives the winter to found a new colony. The bumble bee is generally amber and black. Some species known as cuckoo bees are semi-parasitic, laying their eggs in the nest of other bumble bees and thus avoiding the task of raising their young.

ANIMALS, BIRDS AND INSECTS IN THE GARDEN



CRANE PLY

There are about 28 species of leafcutter bee in Britain. The colours vary with the species, though many are amber and black. The size also varies, some are 1 in. long, others smaller. They cut ovalshaped pieces out of tender green leaves, often rose leaves, and roll them between their legs to carry them away to use in nest construction.

In Britain there are approximately 100 species of mining bee, most of them being under \(\frac{1}{2} \) in long—and of variable colour. They are solitary bees, looking not unlike hive bees, and lay their eggs singly in deep holes, often excavated in lawns. The spoil from the burrow is carefully spread round to avoid attracting attention to the opening. They help to pollenize and do no harm.

More than 250 species of wasp can be found in Britain. The common wasp is yellow and black, and \(\frac{1}{2}\) in. long, Like bees, they feed upon nectar, fruit juices and other vegetable matter, but feed their larvae on insects, spiders and other animal matter, thus acting as scavengers. Only the queen survives the winter to found a new colony.

Gall wasps are tiny little creatures, all under \(\frac{1}{2}\) in. long. They are rarely seen, but their presence is recognized by the galls produced by their larvae, such as oak apples and robin's pin-cushions.

Ichneumon files vary considerably in form—there are 2,000 species in Britain. Their sizes are various, the largest being about 24 in. long including its ovipositor. They are parasitic and lay their eggs in the nest or larvae of other insects, for example caterpillars, and are thus responsible for destroying vast quantities of insects, many of which are injurious to man.

FLIES, MOSQUITOES, ETC.

This is a very big order, there being over 5,200 species in the British Isles.

There are nearly 300 species of crane fly in Britain. The larvae of this species are the leather-jackets, notorious to both farmer and gardener for the damage they do to the roots of grasses. The one most generally seen is the daddy long-legs, which is brownish and, including the unstretched legs, about 13 in. long.

Flesh flies, of which there are about 330 species, include the brilliant bluebottles and greenbottles. Their names are descriptive of their colours, and they range from \(\frac{1}{4}\) to \(\frac{1}{4}\) in. They live on all forms of decaying matter, particularly carrion, and are spreaders of disease. Some of them are parasitic in the larval stage.

Hover flies take their name from their habit of hovering motionless in the air, their wings almost invisible. There are about 230 species in Britain, most of them brightly coloured. Many of them resemble bees or wasps. They take nectar from flowers, and in the larval stage many of them live on aphids.

Mosquitoes, of which there are 49 species in Britain, are brownish and require stagnant water to breed in. Their larvae are frequently to be found in the garden water-butt.

Clegs, which are one of the 23 species of the horse fly, do no harm in gardens but, like mosquitoes, attack the gardener. They are blood-suckers and the wounds they make can cause much irritation. They are about ½ in. long and are dark grey or black.

PUTTERFLIES AND MOTHS

The best way to distinguish between butterflies and moths is to examine their antennae. In butterflies the antennae swell out at the tips to form minute clubs; in moths they are very varied and often feathery. Butterflies normally rest with their wings folded vertically above their backs; many moths fold their



wings backward so that the forewing covers the hind wing.

MOSQUITO

There are more than 80 species of butterfly to be found in Britain. Between March and November one kind or another is on the wing, providing movement and colour in the garden and pollinating plants in the same way as the bees. But the caterpillars of some of them are harmful and should be destroyed (see Garden Pests).

The male wall (Parage megoera) is brownish-orange with dark brown markings. It has a black and white spot on each forewing and four similar spots on each hind



wing. The colour of the female is more variable and it has larger wings with clear transverse lines. The wall is on the wing from May to August. The caterpillar feeds on grasses, especially couch and cock's foot, and is pale green dotted with white, with three pale lines edged with dark green on its back and a white line on each side. The head is green, dotted with white.

The colour of the male meadow brown butterfly (Epinephele justina) is warm brown with dull orange markings. It has a black and white spot within a patch of orange near the tips of the wings. The colour of the female is very variable; it has no black and is more marked with orange which forms a broad patch on the forewings. The butterfly is on the wing from June to September. The caterpillar feeds on grasses and is bright green, covered with short hairs and with a darker green line down the back. The head is a darker green than the body.

Both male and female red admiral (Pyrameis atalanta) are a warm brown with scarlet bands and white dots on the forewings and black dots on scarlet bands on the hind wings. The white edges of the wings are dotted with black and there is a tracing of blue on the margins of the forewings and a little blue at the angle of the hind wings. They are on the wing from May to October or November. The caterpillars feed on nettles and are variable in colour. Some are almost black. freckled with white, others are grey marked with yellowish green. Some have two yellow stripes on the sides. The head is black.

The small tortoiseshell (Aglais urticae) is reddish-orange, with yellow patches, black markings of varying size, and blue crescents. It is on the wing from June to September. The caterpillar feeds on nettles, and is yellowish freckled with

ANIMALS, BIRDS AND INSECTS IN THE GARDEN

black, with a black line bordered by yellow down the centre of the back. The head is black, speckled with yellow.

The peacock (Vanesso to) acquired its name because of the "peacock's eyes" on the brownish-red wings. The hind wings also have "eyes" and are a much darker brown, faintly marked with yellow near the base. The peacock is on the wing from March or April to August. The caterpillar feeds on nettles and is velvety black with white spots. The head is glossy black.

The male common blue (Pelyomnatus icarus) is blue, tinged with violet, with black edges to the wings. The female is generally brown and has blue-scaled wings edged with a line of orange crescents and black spots. This butterfly is on the wing from April to September. The caterpillar feeds on bird's-foot trefoil and rest-harrow, and is green and wrinkly, covered with brownish hairs and with a darker line down the centre of the back. The head is black.

The large white butterfly (Pieris brassicae) is white with broad black tips to the forewings and a black mark on the front edge of the hind wings. The female also has two black marks on the forewings. The large white is on the wing usually from May to September. The caterpillar feeds on all brassicas and is greenish with yellow lines on the back and sides, speckled with small, blackish warts, and smells unpleasantly.

The small white butterfly (Pieru rapue) is white, but at times somewhat yellowish, and generally has a slight clouding of black on the tips of the forewings and black spots near the centre of the wings; the markings are rather faint in the male. The butterfly is on the wing from May to September, occasionally longer. The caterpillar feeds on plants of the cabbage family as well as on nasturtiums and





mignonette. It is green with a yellow line on the back and a row of yellow dots on the sides, speckled with black and covered with short black hairs. The head is brown.

The white or creamy-white butterfly, orange tip (Euchloë cardamines) has hind wings mottled with greenish-grey. The male has a black spot on a large orange patch on the forewing, the tip of which is black. This orange colour is replaced in the female by a smaller patch of dark grey. The butterfly is on the wing from mid-April to August, chiefly in June. The caterpillar feeds particularly on hedge-mustard and cuckoo-flower, and is a dull green, bluer above and yellower below, covered with fine white and black hairs, and with a white line along the sides.

The tips of the forewings on the brimstone (Gonepieryx rhamm) are pointed. The male is sulphur-yellow with an orange spot at the centre of each wing and small rust-red dots along the front and outer margins of the forewings. The female has similar markings but is a greenish-yellow colour. The butterfly is on the wing from March (sometimes February) to August. The caterpillar feeds on the buckthorn and is green becoming bluer on the flanks, with a pale line along the sides, the whole speckled finely with black.

MOTHS

Although moths vastly outnumber butterflies, they are chiefly active at dusk and so are seldom noticed. They are attracted to bright lights and can also be collected on tree trunks that have been smeared with sugar solution. The larvae of some moths do great damage to plants and trees.

The following are four of the most commonly found larger moths.

ANIMALS, BIRDS AND INSECTS IN THE GARDEN

The male lackey (Malacoroma neustria) varies from pale yellow to pale reddishor dark-brown, and the female from pale to reddish-brown. They are on the wing during July and August, The caterpillar feeds on fruit trees as well as on hawthorn, birch, elm, oak and willow. It is blue-grey and hairy with a thin white line down the middle of the back flanked by reddish stripes.

The forewings of the garden tiger (Arctia caja) are whitish, barred with brown, the hind wings vary in colour from bright scarlet to orange and even yellow, heavily spotted with blue-black. This moth is on the wing in July and sometimes in August. The caterpillar feeds on a very wide variety of plants and is almost black, being densely covered with long black hairs on the back and reddish hairs on the sides.

The common yellow underwing (Nocius pramuba) has forewings which range in colour from sandy and reddish-browns to dark purplish-brown, and yellow hind wings bordered with black. It is on the wing chiefly in June and July, but has been seen earlier. It is frequently disturbed during the day. The caterpillar feeds on grasses and low plants and is a brownish colour, sometimes yellowish or tinged with green, and has dull yellow lines on the back. The head is pale brown with darker marks.

The magpie (Abraus grosulariata) is white or yellowish with orange bands and black spots and dashes on the forewings. The hind wings are less heavily spotted with black and have no orange. The magpie moth is on the wing in July and August. The caterpillar feeds on currants, gooseberries, apples, hawthorn, privet and elm, and is generally a creamy white with black patches and dots and a red line on the sides. It is sometimes completely black. The head is black.



Notes on Garden Law

When legal advice is needed about matters concerning the garden, a solicitor should be consulted. The following notes can serve only as a guide to some of the legal problems relating to the garden.

ANIMALS

The owner of a domestic animal is not, in the absence of negligence, liable for any vicious, mischievous act done by the animal, unless the vice or ferocity is contrary to the normal character of the species to which the animal belongs, and the owner is proved to have known of the animal's tendency to do the kind of damage done. If the owner is, however, negligent, absence of knowledge is immaterial. But if a dog worries almost any farmyard animal, its owner becomes liable without any proof of knowledge or of neglect on his part or of any mischievous propensity in the animal.

The owner of domestic animals is bound to keep them upon his land under control, and if they escape on to a neighbour's land and commit a trespass he is liable for such of the damage done as it is in their nature to do. It is to be expected, for example, that when cattle, sheep or poultry stray into a neighbour's garden they will eat his grass and vegetable produce, and their owner will therefore be liable.

This liability is absolute, unless the escape was involuntary or due to an act

of God or to the act of a stranger (not known to the owner) or unless it was caused by the default of the injured party (in failing to maintain his fence, for example). But no action lies for the trespass of cats or dogs (except as to farmyard animals) or for any damage that they do, unless the action can be brought for negligence. It is not negligence to allow liberty to an animal of a kind which is usually given liberty.

The owner of a domestic animal which enters a garden from a highway is not, if there has been no negligence, liable for damage caused by it, and the garden owner should protect his property by fencing it. Any person bringing animals on to the highway is, however, bound to take reasonable care that they do no damage to the person or property of others, and if such a person is negligent the garden owner may be able to recover damages. He must, however, prove negligence, but the unexplained presence of the animal is some evidence of negligence.

A landowner is under no duty to prevent domestic animals escaping from his land on to the highway. If, therefore, such animals do escape, and cause damage, he is under no liability unless it can be shown that he knew of the animal's mischievous or vicious propensities.

There is no right to enter a neighbour's land to dig up rabbit burrows. There are, however, under the Pests Act, 1954, special Statutory Orders made for the reduction of the number of rabbits and a gardener who is plagued by rabbits could profitably ask if the Ministry of Agriculture, Fisheries and Food, Hook Rise, Tolworth, Surrey, could help him.

Local authorities enforce statutes dealing with rats and mice.

BIRDS

Provisions of the Protection of Birds Act, 1954, make it a criminal offence punishable by a fine of up to £5 to kill, injure or take any wild bird, or to take, damage or destroy the nest of any wild bird.

The Act, however, is much more complicated than this and there are four schedules which contain lists of birds. The Home Secretary has power to vary the names of the birds inserted in these schedules so that the birds which are protected at one time may later cease to be protected. The considerations which influence the Home Secretary are the rarity of the bird, or its value for horticulture or agriculture.

If, therefore, a gardener feels that he must kill some bird, he should pause if he is not sure what bird it is. On the other hand, if he is prosecuted for killing or injuring a wild bird (other than a bird protected at all times or during the close season by special penalties) he has a good defence if he satisfies the court that his action was necessary for the purpose of preventing serious damage to crops, or any other form of property.

Further information about the Act and wild birds can be obtained from the Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire.

BONFIRES

If a garden owner uses his garden in such a way as to interfere with the health, comfort or convenience of a neighbour, he may become liable under the law concerning nuisance, but the interference has to be substantial before the law will take notice of it. Thus the noise of a mowing machine or the smoke from a bonfire, although they may be objected to, are generally speaking incidental to the use of a garden and no legal complaint can be made about them.

Only if a man's conduct passes the bounds of what is reasonable can a cause of action arise.

The smoke from an occasional bonfire is unlikely to attract the operation of the Clean Air Act, 1956, since such smoke is not forbidden in smoke control areas and would probably not be a nuisance to the inhabitants of the neighbourhood, unless perhaps the fire had been lit with paraffin and gave off black smoke, when a local authority could bring a gardener before a magistrates' court, And a bonfire should not be lit if the smoke from it is going to spread across a public road and thereby endanger road-users; the person who lit this bonfire might well be liable if an accident resulted.

DAMAGE BY BRANCHES AND ROOTS

An action for damages can be brought if the roots or branches of a tree encroach on another person's property and cause actual damage to it.

In certain cases a landlord may be liable for damage, although he has never been in actual occupation of the property. A tenancy agreement may contain a clause whereby the tenant agrees to keep trees and shrubs in proper condition and to indemnify the landlord against any claims.

It is wise to see that comprehensive insurance policies cover any damage caused by tree roots and branches.

The passage of time does not give a landlord a legal right, comparable to a right to light, to have his tree roots or branches growing in or over his neighbour's land.

DAMAGE FROM SPRAYING

The dangers of spraying, whether in the form of liquid or dust, are now more widely appreciated and the legal consequences should be known. If a neighbour's crop or land is injured in any way by spray from adjoining land, he can sue for damages and, if the spraying continues, he can apply for an injunction to stop it.

DAMAGE TO GARDENS

The Town Gardens Protection Act, 1863, despite its name, does not protect ordinary gardens, but only enclosed gardens and ornamental grounds set apart for public purposes.

A large number of criminal offences are, however, of importance to gardeners. It is an offence to steal, or destroy or damage with intent to steal, any plant, root, fruit or vegetables, growing in any garden or greenhouse, or any tree, sapling, shrub or underwood growing anywhere.

Sometimes no intent to steal can be proved, and then (subject to proof of unlawful intent) it is the doing of damage alone which attracts punishment. Broadly speaking, it is an offence to destroy, or damage with intent to destroy, any of the trees and plants mentioned above, or to destroy any fence, wall, stile or gate. An Act of 1914 further makes it an offence wilfully or maliciously to commit any damage to any property whatsoever; for example, trampling on grass.

The maximum penalties for these offences vary widely, depending sometimes on the value of the property involved and sometimes on whether or not it is the first or subsequent conviction, but in most cases fines and imprisonment can be ordered.

FENCES

CHARACTER OF FENCES

There is nothing to prevent a landowner using barbed wire for his fencing but, if the barbed wire constitutes a nuisance to the highway, the local authority may, by notice, require its removal, and if it is not removed they can apply to a magistrates' court for an order to remove it and can then remove it themselves at the cost of the landowner. Effective barriers can be made with certain roses, berberis and holly.

DUTY TO FENCE

The law does not require an owner of land to fence it, but on sales of building land during the last 50 years covenants have generally imposed an obligation to crect certain fences and maintain them, so that every owner of a house may have his property fenced all round. There is no general duty to fence against the public, but, if children are permitted to trespass on land and are injured thereby, the landowner may become liable. Apart from any questions of self-interest, in view of these rules about liability towards children it is wise to keep property securely fenced.

OWNERSHIP OF FENCES AND HEDGES

Title deeds ought to show accurately the boundaries of property with their measurements and ownership. "T" marks inside a plan indicate ownership and liability for repair.

If the deeds are silent or not clear then the facts relating to any particular case will have to be investigated to decide who owns a hedge or fence, or whether it is owned in common with the owner of the adjoining property.

Acts of repair done by one owner and the position in which trees or shrubs are planted or posts fixed may indicate ownership, Joint or party walls, hedges or fences are not uncommon, and each party then has a right to have the hedge or fence maintained as a dividing fence and is equally liable for its maintenance and repair.

GREENHOUSES AND GARDEN SHEDS

The erection of a building or addition to a building is controlled in the first instance by building regulations or by-laws made under the Public Health Acts. Before erecting a greenhouse, it is wise to provide the local authority with full details of the proposed house, and inquire if consent is necessary. If it is, then a plan of the greenhouse may be required. The local authority may, by building by-laws, provide that special provisions are to apply to materials specified in the bylaws which are, in the absence of special care, liable to rapid deterioration or are otherwise unsuitable for use in the construction of permanent buildings.

An owner who erects a building in contravention of by-laws may be committing a criminal offence. He may also be required to pull the building down, and if this is not done a local authority may themselves pull it down and recover from the owner the cost of doing it.

Secondly, the Town and Country Planning Acts provide that the consent of the local planning authority is necessary for all development of land, Development means the carrying out of building or other operations in, on, over or under land or the making of any material change in the use of any buildings or other land. The exception of the use of any buildings or other land within the boundary of a dwelling-house for any purpose incidental to the enjoyment of a dwelling-house does not appear to help the erection of garden sheds or greenhouses. However, a General Development Order made under the Acts has permitted the erection without any permission of garden sheds to a height of 12 ft. for those with a ridged roof, and 10 ft. in other cases.

Since Orders can be varied more easily than Acts of Parliament can be passed it is advisable to ask the local planning authority if consent is necessary for the erection of a greenhouse or garden shed.

GREENHOUSES ERECTED BY TENANTS

Before a tenant erects a greenhouse or shed he should look at his lease or tenancy agreement to see whether he has to obtain the landlord's consent to do so. A tenancy agreement frequently provides that no addition to or alteration of the property let may be made without the landlord's written consent.

At the end of the tenancy the tenant may wish to take the greenhouse or shed away with him. The general law is that, if the greenhouse or shed is fixed to the ground, then it has become part of the property let and belongs to the landlord, if, however, it is just placed on the ground and can be removed without injuring the ground in any way, then the tenant can take it away since it is a tenant's fixture.

INSECTS AND PESTS

The Minister of Agriculture may make Orders to prevent the introduction into Great Britain of any insect or other pest destructive to agriculture or horticultural crops. The term "crops" includes seeds, plants and any parts thereof, trees and bushes, and the term "insects" includes bacteria and other vegetable or animal organism and any agent causing a transmissible crop disease or fungus. Any such Order may prohibit or regulate the landing of any article which might introduce such pests and require the destruction of any such article. The penalty for breach of an Order is three times the value of the goods or £100, whichever is the greater, or imprisonment for up to two years, or both.

The Minister may also make Orders to prevent the spreading of destructive insects, fungi or pests, and may direct the removal or destruction of any crops, trees, or bushes on which they are found in any stage of their existence, or to or by which they may be likely to spread. An inspector may enter land to examine it to see if there are any insects etc. there, and may remove or destroy any crop etc. infected, or which is likely to act as host. Orders may also prohibit the keeping or sale of any live specimens of such insects etc., or the distribution of any specimens of them.

Compensation based on their value at the time of destruction may be paid for any crops, trees or bushes destroyed by order. These orders are enforced by local authorities.

The Ministry of Agriculture has powers to serve a notice on the occupier of land requiring him to take steps to destroy certain animals, birds and bird eggs, for the purpose of preventing damage to crops, food or land. Birds protected by the Protection of Birds Act are excepted. A number of Orders have been made under these powers and these deal, among other things, with silver leaf and Colorado beetle.

NEGLECTED SITES

An Act of 1961 provides that where on a vacant site in a built-up area there is an accumulation of rubbish which is a serious damage to amenity, the local authority may take such steps for removing the rubbish as they may consider necessary at their own expense, "Rubbish" means rubble, waste paper, crockery and metal, and any other kind of refuse (including organic matter), but does not include any material accumulated for, or in the course of, any business.

PLANTS FROM ABROAD

Plants can be brought home from abroad only under licence. The person who has uproored plants outside the United Kingdom and has presumably complied with the local law, is subject, when bringing the plants into the United Kingdom, to the Importation of Plants Orders, 1955 and 1959, made under Acts of Parliament of 1877, 1907, and 1927. The purpose of these Acts and Orders is to prevent the importation of diseased plants.

The first provision of the main Order, of 1955, prohibits the bringing into the country of any annual and biennial plants from places outside Europe. This is followed by a more sweeping provision prohibiting the importation of any plants from abroad unless they are accompanied by a certificate of health issued by the agricultural authorities of the country of origin.

The Minister may issue licences permitting bona fide collectors to import personally collected wild plants as passenger's luggage, or to send them through the post in a packet not exceeding 7 lb. in weight.

Application for such a licence must be made to the Ministry of Agriculture, Fisheries and Food, Whitehall Place, London S.W.I, with the address at which the plants will be retained, the countries to be visited and the date the applicant is returning to this country.

If any plants are imported contrary to the Order they must be destroyed unless an authorized officer, e.g. a customs officer, grants a licence authorizing their importation. The licence may contain conditions that the plants are to be retained by the person bringing them into the country and that any plants or seeds so retained may be examined by a member of the Plant Health Inspectorate at any time within twelve months from the date of the licence.

The penalty for a breach of this Order is a fine of up to £10 or, on a second offence, a fine of up to £50.

There is no important restriction against bringing any plants into the United Kingdom from Northern Iteland or the Republic of Ireland, but there are severe restrictions against importing plants into the latter. The general position is that no plants, trees, or bulbs grown in Great Britain may be imported into Eire except under licence obtained in advance by the importer, and subject to the production of a plant health certificate.

SEEDS

The Seeds Act, 1920, broadly requires a seller of seeds to disclose certain essential facts about the seeds he is selling, or offering for sale, so that the buyer may judge their suitability for his particular requirements. The Act is primarily intended for the protection of the farmer and market gardener, and, to a lesser extent, the allotment holder and private gardener. With the exception of a ban on the sale and sowing of seed containing excessive amounts of certain injurious weed seeds, there is no obligation on the seller of seeds to observe minimum standards, nor is there any restriction on the buyer's free choice of seed offered for sale.

As far as the Seeds Act is concerned, seed of any description, origin or quality may be sold or offered for sale as long as certain essential facts concerning the seed are disclosed to the buyer.

The Seeds Act embraces all agricultural, horticultural and forest tree seeds, but in practice it applies only to such kinds of seed as Ministers prescribe by means of regulations made under section 7 of the Act. The kinds of seed at present subject to regulation comprise most, though by no means all, of the more important seeds sold for sowing in the United Kingdom.

The important facts which must be disclosed by the seller are the analytical purity and germination of the seed. The analytical purity of a parcel of seed refers to the presence or absence of weed seeds, inert matter and seeds of other crop plants, and is usually expressed as the percentage by weight of the pure seed in a sample of prescribed size examined under laboratory test conditions. Germination, also expressed as a percentage, is the number of pure seeds in a sample which produce a normal seedling under laboratory test conditions.

The seller of any kind of grass seed for an amenity purpose (a non-agricultural purpose) whether or not it is on the prescribed list, is not under any obligation to submit the seed to a purity and germination test or to deliver a statement of particulars to the buyer. Buyers of such grass seeds and also the buyers of flower seeds get no protection under the Seeds Act and rely solely on the skill, judgment and reputation of the seedsmen in making their purchases. They also rely on the skill, judgment and reputation of the seedsmen who supply sealed pictorial packets of seeds. The Report of the Committee on Transactions in Seeds, of November 1957* recommends that these laws should be changed and that buyers of amenity grass and flower seeds should receive additional protection. Nothing has so far been done to implement the recommendations of this Committee.

TREES

A garden owner may cut off branches of a tree or shrub belonging to his neighbour which overhangs his soil and he may do this without notice to his neighbour, but he may not go on to his neighbour's land to do it. Any branches which are cut off, the fruit growing on them,

* Cmnd. 300. H.M. Stationery Office, Kingsway, London, W.C.2.

and any fruit which falls from overhanging branches all belong to the owner of the tree. A man may cut his own branches which overhang his neighbour's property but he must do this as carefully as possible, and he should give notice to his neighbour before he does it if the branches are likely to fall and damage his neighbour's land. Roots of trees which encroach on neighbouring land are considered to be in the same category as overhanging branches and may be cut in the same way.

DANGEROUS TREES AND HEDGES

A person who has a hedge or tree which constitutes a danger to occupiers of adjoining land or persons using a highway, is liable under the law concerning nuisance for damage resulting to those persons if he knows or had means of knowing of the danger and allows it to continue.

POISONOUS TREES

The owner or occupier of land who lets poisonous trees, such as yews, grow over someone else's land is liable for any injury they do, for example, if his neighbour's cattle eat them and die. He might also be liable if he constantly allowed children to trespass on his land and they are poisonous berries.

WEEDS NEXT DOOR

There is a section of the Town and Country Planning Act, 1947, which appears to give a local planning authority power to deal with any garden or vacant site which is injuring amenities. Although an untended garden might fall within the section, the precise scope of the section is not altogether clear, and proof that weeds were spreading might not alone be sufficient.

Under the Weeds Act, 1959, however, the Ministry of Agriculture, or any local authority to whom they have delegated the power, may require an occupier of land to take steps to prevent the spreading of injurious weeds. The Act applies to the following weeds and to such additional weeds as may be prescribed: spear thistle, creeping or field thistle, curled dock, broad-leaved dock, ragwort.

Nature Calendar

Nature observes no strict time-table, and to begin a Nature calendar on New Year's Day is to set an artificial limit to the cycle of plant and animal life. Climate, above all, determines what will be seen in garden and field at any given time of the year. In a mild, wet season, plants may appear as much as a month earlier than usual, while in a cold, dry season they may be a month later. Similarly, observers in southern districts of the British Isles will usually be able to

see these plants earlier than those in the north. The habits of animals, birds and insects are governed to a certain extent by the appearance of the plants on which they depend for food as well as by climate.

This calendar is a general guide to Nature's activities. It covers both wild and garden life, for apart from helping the Nature observer, a knowledge of Nature's routine can be exploited to plan a garden in which interest can be sustained through all seasons.



JANUARY

WEATHER

January is often a windy month, with moderate rainfail, and snow when the temperature is low enough. The first part of the month is frequently milder than the latter part.

FLOWERS

A surprising number of flowers can be seen during the bleak month of January. In the garden the lovely Christmas rose, Hellehoras niger, is in flower, as well as H. corsicus. The yellow Iris danfordiae appears in sheltered positions, while chionodoxas make a splash of brilliant blue as the snow melts. The yellow winter aconite and the snowdrop, both of which

grow wild in many localities, make their early show of colour this month.

A few wild flowers bloom throughout the winter, including such weeds as chickweed and dandelion.

PLOWERING SHRUBS

There is still an abundance of winter jasmine, and the winter-flowering honey-suckles are also in bloom, although their branches are bare. Azaras flower against sheltered walls, and Erico darleyemis begins to bloom. The dangling catkins of the hazel are conspicuous, and may start to lose their pollen by the end of the month.

BERRIE

Many evergreens still have brilliant berries. The yellow-berried holly and the brightly polished red berries of skimmia look particularly fine. The ivy has hanging clusters of green fruit. Among the deciduous shrubs, the orange berries of Hippophue rhammoides persist, since they are unappetizing to birds. White snowberries hang on leafless twigs, and the related Symphoricorpos orbiculatus has clusters of coral-pink berries.

DIADS

Many birds move in flocks from communal roosts to feeding grounds in fields and in woods. Among these are woodpigeons, rooks, starlings and jackdaws; chaffinches and other finches; thrushes, tits, and the smallest British bird, the goldcrest. Pewits (lapwings) spend most of their time in the fields.

Flocks of ducks, especially mallard, teal and tufted duck, can be seen on lakes and reservoirs. Moorhens abound on most waters, and coot on the larger lakes. Gulls are seen on stretches of inland water and on deserted beaches. Here, too are plovers, curlews and other waders.

Some birds come into song early in the

winter, and by January, except in the most severe weather, thrushes and sparrows can be heard, as well as the robin, wren, skylark, great tit and nuthatch. Before the month is out, the blackbird and chaffinch will join them.

INSECTS

January is not a month in which insects can be seen generally, though a few mild days will bring out some of the hibernating moths and butterflies for a brief period. The dancing flight of gnats will continue throughout the winter.

ANIMALS

Despite the cold weather, the first lambs are often to be seen. Squirrels scamper through the woods, searching for the nuts that they have hidden, and the badger too sometimes emerges from its winter quarters to hunt for food. A tree stripped of its bark indicates the passing of hungry deer.



WEATHER.

This month is generally not so wet as January, but the early part may be the coldest period of the year.

FLOWERS

Early crocuses such as Crocus imperati are in flower. The rampant Petasites fragrans, though growing so vigorously as to be regarded as a weed, is welcome for its fragrant white flowers.

Among the wild flowers, the lesser celandine is the first member of the buttercup family to flower. Coltsfoot, which sometimes grows as a weed in cultivated ground and is fairly common on waste ground, opens a little later. Dog's mercury is the first woodland flower, followed by barren strawberry, which is more often found on hedge banks.

SHRUBS AND TREES

Flowering shrubs and trees are much in evidence in February. There are caterpillar-like catkins on the yet-leafless aspen, and the hazel has small, red, female flowers as well as cowslip-scented catkins. Alder catkins hang silhouetted against the bare branches. The silky tassels of Garrya elliptica come into flower at this time, as do the hardy dogwoods, Viburnum tinur-and the parrot or fron tree (Parrotia persica). The attractive flowers of

Erica carnea Springwood Pink appear alongside the spidery blooms of witchhazel and the sweet-scented Daphne mezereum.

Other trees and shrubs are none the less striking for having no flowers. The blue cedar is particularly conspicuous for its colour, as are all the ivies, with their shining leaves. The purple, red or pink berries of the pernettyas, which persist for most of the winter, contrast with the new golden growth of young willows. If growing in a sheltered position, elder and honeysuckle will also begin to show their first leaves as soon as there is a mild spell.

BIRDS

Flocks of birds will still be seen, but they will now vary in content and number. Starlings, black-headed gulls, rooks, jack-daws, pewits; house sparrows, pied wagtails and finches will be quick to follow the farmer as he prepares for spring sowing. The goldfinches, and other acrobatic feeders such as siskins, redpolls and tits, are attracted to alder catkins.

Lakes and streams may freeze over in

February, and a mixed collection of waterfowl will therefore visit any open water. The birds seen in January may be Joined by geese and even herons. All these species will move to open estuaries or beaches if all inland waters freeze up.

Birdsong will increase in volume, the yellow hammer and blue tit being perhaps the best known of the species that start singing in February.

INSECTS

No insects will be seen if the month remains cold, but as soon as there is a warmer day the bumble bees will be out.

ANIMALS

The occasional day of milder weather will encourage stoats and weasels to search for holes in hedges and banks in which to make their nests. Young rabbits are already being born in specially prepared underground nurseries or "stops". Some are killed by badgers, whose footprints can now be discovered in the damp earth. Old birds' nests can sometimes be found filled with the remains of the winter feasting of field mice.



WEATHER

The traditional March winds may be expected to roar sometime during the month, but there will be compensating mild, still days as spring approaches.

GARDEN FLOWERS

Many flowers appear with the first signs of spring. Muscari are beginning to bloom in most gardens, as well as all varieties of crocus. The early saxifragas, including the wild golden saxifrage, are starting to flower, and the bergenias will also appear, but may be damaged by frost. Narcissus hulbocodium is in flower, as well as the first daffodils and the short-stemmed lris anguicularis, which has been blooming intermittently all winter. The hardy cyclamen Cyclamen coum produces its frail pink blooms, which contrast well with the various blues of early gentians. The young fronds of many ferns begin to unfurl this month.

WILD FLOWERS

Woodland flowers to be found now include the wood anemone (Anemone nemousa), and, later in the month, the wood sorrel. Primroses, which are found particularly on sheltered banks, are in full flower. The kingcup and butterburr will be seen near streams and in open woodland. Sweet violets, greater stitchwort, ground ivy and moschatel appear on hedge banks, with such weeds as the daisy, hairy bittercress and many kinds of speedwell.

SHRUBS AND TREES

Flowering shrubs and trees again dominate the scene, the bright yellow of forsythia being especially showy. Magnelia stellata and M. sculangiana are in bloom. Camellias and Abeliophyllum distichum will flower in sheltered positions, and Mahama aquifolium makes a colourful display. Stiff flower spikes hang from the bare branches of Stachyurus pruccax. Several of the chaenomeles (japonica) are in flower, and the buds of the lilac are swelling. Once the cold winds die down, the almond will produce its beautiful deep pink blossom.

The flowering of the blackthorn (sloe) is said to coincide with one of the season's cold spells. On the other hand, the cat-kins of the sallow, known as pussy willow, open when warmer weather brings out the first spring insects. The first dull-red flowers of the elm also appear.

The leaves of the hawthorn start to show, and the new red leaf growth of the roses can be seen. The architectural beauty of dwarf conifers is conspicuous in the rock garden.

BIRDS

Once the cold weather breaks, the flocks of birds thin out, and there is a tendency for them to move about in pairs as the days lengthen. The rooks begin rebuilding their nests in earnest. Other early nesters are woodpigeons, thrushes, blackbirds and, among the water-fowl, mallard, moorhens and coot.

The first migrants are now due, among them the wheatear and the chiffchaff, which sometimes winters in the mild south-west of the British Isles, Even the first swallow may arrive in March.

INSECTS

The few British butterflies that pass the winter as adult butterflies emerge from hibernation. These include the small tortoiseshell, the peacock and the comma, all of which can be seen feeding in gardens, where they lay their eggs on young nettles. The brimstone also appears in March, but usually stays in the woods on the buckthorn plants.

Ladybird beetles are also due to leave their winter quarters, and the seven-spot and two-spot varieties visit gardens to feed on greenfly.

ANIMALS

Young badgers and fox cubs are born in March, and young hares can be found lying in the shallow depressions in the ground that constitute their nests or "forms". The antics of the adult male hares justify the description "mad as a March hare". In the ponds, toads are beginning to lay their long strings of eggs.

Grass snakes, adders and lizards come out to sun themselves on warmer days.





WEATHER

Thunder, hail and showers are not infrequent. Generally, rainfall is not high, and temperatures rise steadily.

GARDEN FLOWERS

Early tulips provide a splash of colour in April, and dicentra, trilliums and periwinkles start to flower. Hyacinths now flower in the open garden, with the small bulbous trises, and carpets of daffodils. Muscari are still blooming, and are joined by forget-me-nots, wallflowers, Fritillaria meleogris and Derenicum plantagineuen.

In the woodland garden Lenten roses are at their best.

THE ROCK GARDEN

The rock garden now comes into its own. Polyanthus make a gay display, with some primulas among the shrubs, and there are still plenty of primroses. The violas are opening and mounds of mossy saxifragas are covered with buds. There are anemones and arabis with bright cushions of aubrieta and pasque flowers growing between the stones.

WILD PLOWERS

April brings an abundance of wild flowers, too. The buttercup is common along the roadsides, but the daisy, pearlwort and woodrush prefer shorter turf, such as garden lawns. Other weeds in the garden at this time include groundsel, shepherd's purse and annual grass.

The hedge parsley sometimes produces a few flowers in April. Other roadside flowers to be seen now are the wild arum. usually known as lords and ladies or wake robin; dove's-foot crane's-bill and herb Robert, both members of the geranium family; and the common violet. The cuckoo flower is found in damp places.

In the woods, bluebells, red campion and yellow archangel are at their best before the trees come into leaf, and where timber has been felled and the copse-wood cleared, these flowers produce magnificent drifts of colour.

TREES AND SHRUBS

In April the first leaves appear on horse chestnut, mountain ash and larch. In the garden, Viburum burkwoodii and Erica arborea are in flower, soon to be joined by the cherries and the fragrant sprays of pieris. Chosya ternata, too, may begin to bloom.

BIRDS

Many resident birds will be nesting, and a few young birds from the early March nests will already have fledged.

Most of the migrants are now on spring passage: more chiffchaffs and then the willow warbler and related species arrive and swallows begin to pass in increasing numbers. House martins, sand martins and swifts will also be seen before the month is out. Two other well-known birds are due in April: the cuckoo and, somewhat later, the nightingale.

Waterfowl will have left their winter quarters by now and flown north and east to their nesting grounds by stream, lake or marsh. The waders, in particular, will have assumed their breeding plumage, so colourful that they appear to be different species from those seen in much plainer feathers during the winter.

INSECTS

The butterflies that spent the winter as chrysalides are hatching out on warm days. The small garden white visits gardens to lay its eggs on green vegetables; the orange-tip and the green-veined white are more likely to be seen in damp meadows. The speckled wood flutters along woodland drives where there is partial shade, and the holly blue visits shrubberies or open woods where it can find holly and ivy.

ANIMALS

The hedgehog, which may have been seen on warmer days during the winter, emerges from hibernation. Fresh green shoots in the woods may fall a prey to squirrels, whose young are born at this time. Field mice begin their long breeding season, although their numbers are kept down by stoats and weasels.

MAY the al of sights

WEATHER

A warm spell towards the end of the month usually confirms the arrival of spring, but there are often frosty nights to worry the farmer and gardener.

GARDEN FLOWERS

Tall, stately tulips are perhaps the most conspicuous of the many flowers to be seen in the garden in May; parrot tulips add a particularly exotic note to the spring border. Forget-me-nots are still in flower; jonquils and showy clusters of trollius now add their colour, and tall verbascums are beginning to bloom. Siberian wallflowers make a striking bedding plant, while the great buds of the paeonies are starting to burst. In the bog garden, caltha is in flower, and primulas are opening by the water side. London pride flowers now, and in the rock garden the lilac-coloured heads of Rammda myconi appear.

WILD FLOWERS

Roadside grasses are growing fast and beginning to flower, including several species of brome grass, with their long, nodding panicles.

Ox-eye daisy, bush vetch and red clover are all in flower now, and on rougher ground birdsfoot trefoil can be found, with wild strawberry, scarlet pimpernel and mouse-ear hawkweed. In the woods are bugle, early purple orchis and ransom; by streams, yellow flag and ragged robin; in wet meadows, the early marsh orchis; and in boggy ground, the cotton grass.

TREES AND SHRUBS

Among the last of the trees to break into leaf are beech, oak, ash and walnut. Latest of all is Catalpa bignomoides whose pale green heart-shaped leaves contrast with the colourful young foliage of various species of acer.

The hedges are now thick with hawthorn or May blossom, and horse chestnut, mountain ash and crab-apple are
also in flower. In the garden, some of the
pink tamarisks are already flowering
freely, and berberis and Fabiana imbricata
are in full bloom. Azaleas and rhododendrons make brilliant splashes of colour.
Tree paeonies and laburnum are flowering, and illac scents the air. Clematis mantama and the delicate mauve or white
flowers of wisteria decorate many walls.
There are still pink buds on the pear
trees, interspersed among snowy white
blossom.

BIRDS

Birdsong is at its height, starting before dawn and dying down as the sun rises. At dusk there is another performance of lesser volume and shorter duration.

The last migrants arrive, including the tree pipit, the spotted fly-catcher and the turtle dove with its purring, monotonous song. Two other late arrivals, the nightjar and the grasshopper warbler, settle in the woods or on scrub heathland. They can be heard there at dusk, with such residents as the pheasant, the tawny (wood) owl and the little owl. Snipe and woodcock frequent wetter places. In the garden, noisy, insistent young blackbirds, thrushes and starlings demand food from busy parents.

On the shore, many waders will still be passing, making for northern breeding sites; in their place, terns will be nesting.

INSECTS

More butterflies emerge during May, and the large cabbage white is particularly common in gardens and woods. Many small butterflies can be seen on closecropped commons, including the small heath, common blue and small copper. The dingy and grizzled skippers are also there, though they might be mistaken for moths. The green hairstreak settles on bramble bushes; the wall butterfly rests on bare ground, stones and fences; and the pearl-bordered fritillary stays at the edge of woods and clearings.

Moths increase in number as the days lengthen and become warmer, and many are attracted to lighted windows at dusk. Beetles, too, fly at dusk, and that pest of woods and near-by gardens, the cock-chafer, often comes indoors.

Dragon-flies are beginning to appear, and already the four-spotted libellula can be seen near boggy areas. The much smaller danusel-flies emerge from lakes, ponds and streams, and range over a wide area. The most common are predominantly blue in colouring, among them the common blue damsel-fly, the common ischnura, and the common coenagtion. The larger red damsel-fly frequently accompanies them.

ANIMALS

Rats frequent human habitation, streams and river banks in search of food. Unsightly hillocks may appear on lawns as evidence of the presence of moles, whose young are born this month.

Antlers cast by stags can sometimes be found in the woods.



WEATHER

Even allowing for the many unexpected changes in the British climate, June is one of the driest months of the year, and brings welcome summer warmth. It is often the summer.

GARDEN FLOWERS

This is the month of roses; of the many species that reach perfection at this time, the deep red of Rosa moyesii and R. hugonis, with its graceful arches of yellow flowers, are among the most striking.

The herbaceous border is also a kaleldoscope of colour, with poppies, potentillas, paeonies, and tall spires of lupins. The passion flower is of special interest, and stocks scent the evening air. The graceful arches of Solomon's scal are white with flowers, and the great trumpets of the day lily are also open, though each bloom lasts for only one day.

Many varieties of iris are already in bloom, but the long season for scabious and for the blue Omphalodes cappalocica is only beginning. Geraniums and alliums, candytuft and campanulas are all in flower, while columbines shake on their wiry stems at the faintest breath of wind.

Window-boxes and hanging baskets make colourful displays,

WILD FLOWERS

Hay-making, hedge-trimming and vergebrushing are in full swing in June, but on untouched roadside hedges honeysuckle, bramble, elder, dog rose and field rose should be at their best. Under the hedges and on the commons, the more noticeable of the many summer flowers are the poppy, silver-weed, cranesbill, toadflax, St. John's wort, ragwort, agrimony, hogweed (cow parsnip), goosegrass (cleavers) and willow herb. Hop trefoil and others of the clover family are now in flower, as well as yarrow and the first thistles.

Certain flowers, including wild mignonette, rest harrow, stonecrop and rockrose, are confined to chalk and limestone areas. There, too, are the yellow-flowered rough hawkbit and ox-tongue. Out on the dry commons are milkwort, with deep blue flowers that pale to white; and pink centaury, growing among heath bedstraw, creeping cinquefoil, and the four-petalled tormentil.

In woodlands, foxglove flowers profusely where the timber has been cleared, whereas the dainty enchanter's nightshade likes some shade. The lesser spearwort thrives in wetter places, while at the edge of the water is the taller water dropwort, and in the water itself several varieties of water crowfoot.

PLOWERING SHRUBS AND TREES

This month also brings the sweet, heavy, all-pervading scent of lime flowers, and several shrubs and trees provide colour in June, including Buddleia alternifolia, which is decked with tiny mauve flowers.

BIRDS

Birdsong is diminishing by now; nightingales and robins cease singing by the middle of the month, and cuckoos, blackbirds and others also become silent as the year moves towards midsummer.

Large numbers of swifts spend many hours feeding on the wing, flying high on warmer days to take the rising flies.

On lakes, mallard drakes begin to moult and grow their duller, non-breeding plumage. Gulls nest on cliff ledges and shingle beaches, alongside the terms with their distinctive forked tails.

INSECTS

The most common of the British brown butterilies, the meadow brown, is often seen in June. The small pearl-bordered fritillary frequents the damper woods and marshy fields, while large and small skippers stay near the edges of woods and on rough commons. By the end of the month, the ringlet can be seen in country lanes and woodland rides.

Summer broods of many spring butterflies are due, including the small white, the small tortoiseshell and, less common, the comma. Migrant clouded yellow are now feeding in clover and lucerne fields.

The migrant humming-bird hawkmoth visits gardens in June to feed at the petunias. Day-flying moths found on commons include the cinnabar and the five-spot and six-spot burnets; the empty cocoon cases of the latter are often seen fixed to the stems of grasses.

Two damsel-flies seen for the first time this month are the demoiselles Agrimvings, with partly shaded wings, and A. splendens, with fully shaded wings. Both

frequent tall plants and trees near the streams from which they have recently emerged.

ANIMALS

This is one of the few times of the year when it is possible to see that nocturnal creature, the budger; on warm evenings, at twilight, a whole family may be abroad in the woods. There, too, young foxes can be seen at play. Natterjack toads can be heard calling loudly at this time of year, while frogs help the gardener by devouring insects and slugs.



WEATHER

July is frequently a wetter month than June, but weather permitting, the harvest progresses. The latter part of the month and the early part of August, are considered the peak of high summer.

GARDEN FLOWERS

Daisies add colour to the border in July. Bold groups of phlox make a gay display alongside sedums, astilbes, bergamots, cornflowers and Achillea Gold Plate, and the white or yellow spikes of lysimachia. Pansies should continue to flower if the dead heads are removed. Annual nasturtiums are blooming, and antirrhinums are at their best. Roses can be cut freely for indoor decoration, and begonias are beginning to flower. Tubs are bright with velvety coleus, Aethionema Warley Rose is blooming in the rock garden, and in the pool the water lilies are opening.

WILD FLOWERS

Heather is one of the main attractions in July, including the purple-flowered bell heather of the drier moors and commons and the pink-flowered cross-leaved heather on wetter moors and bogs. Ling flowers somewhat later, while bilberry grows best on northerly sites and in partial shade. Sometimes the small red flowers of dodder, a parasite on heathers, can be seen, and the yellow of dwarf furze often provides a further contrast.

Several beliflowers related to the

Canterbury bell are in flower—harebells in dry places; the taller nettle-leaved bellflower on hedge banks in the south; and the great bellflower farther north.

Greater bindweed is flowering now, twined among roadside hedges, as well as traveller's joy, though this is confined to chalk and limestone soils in the south. On dry banks and in the woods are wood sage and golden-rod, and on the verges wild carrot and wild parsnip. Great willow-herb, meadowsweet, marsh valerian, gipsywort and great water dock are seen on damp ground, and sundew and bog asphodel in quite boggy places.

PLOWERING SHRUBS

Lavender is in full bloom, and the heads are ready to be cut and dried for lavender bags. The summer jasmine. Jasminum officinale, is covered with fragrant white flowers, while Erica vagans and the spiky flowers of yucca are starting to bloom. Buddleias are still a mass of colour, and there are purple, feathery flowers on the smoke tree, Rhus cotinus, matching the blooms on several varieties of Clematis jackmans. The pink or red flowers of escallonia blend very well with the bold, deep carmine of Fuchsia magellanica and

F.m. riccartonii. Deutzias, too, are in bloom.

ILLOS

The woods are almost silent now on hot, sultry days, for few birds are singing. A number of second broods are still unfledged and some birds have a third brood to hatch and rear. For many, however, this is the turn of the year. Their breeding season is over, and they can now range freely in search of food. Some species gather into flocks, and the first swallows may assemble on the telephone wires late in the month—the start of a leisurely movement southward.

INSECTS

The summer broods of several butterflies will be seen in the garden this month, including the peacock, the holly blue, the brimstone and the wall. The brown argus and silver-studded blue stay on the shortturfed commons, while the chalkhill blue and the grayling are seen on limestone soils. The hedge brown frequents both commons and country lanes, often settling on bramble bushes.

The dark green and silver-washed fritillaries fly over commons, but the high brown fritillary is restricted to the woods, as is the purple hairstreak. The latter, though common, is often difficult to see, as it flies very high and settles at the top of tall oak trees.

Mosquitoes, midges, clegs, and other biting illes are uncomfortably plentiful in the woods at this time.

ANIMALS

The hedgehog, a welcome visitor to the garden since it eats snails and slugs, produces its young in July. In the woods, young deer are also born at this time.

Newts, which lay eggs on the leaves of water plants, can still be seen in ponds.

AUGUST

WEATHER

Like July, this may be a wet month, although there are usually periods of fine weather too. The days begin to shorten towards the end of the month.

GARDEN FLOWERS

There is already a suggestion of autumn in the garden, for Michaelmas daisies are beginning to flower in the border. Dahlias, too, make a fine display, with Korean and other early-flowering varieties of chrysanthemum. The strong colours of the zinnias vie with red hot pokers, polygonums, marigolds, and late gentians. Plenty of heleniums are available for cutting, and golden rod, ligularia, and delicate mauve and blue salvias are also in flower now. Hollyhocks tower over the hedge, and near-by, perhaps, there is a brilliant display of verbena.



The delicate flower spikes of the hostas contrast well with their bold leaves, and autumn-flowering cyclamen such as Cyclamen europeeum are blooming.

The yellow flowers of evening primrose have an ethereal appearance as they open at twilight, and in the rock garden there are further splashes of yellow, for the hypericums are in bloom.

The rose garden is still colourful. Wichuraiana, rambler and miniature varieties are all in flower.

WILD FLOWERS

Perhaps the most interesting wild flowers to be seen in August are those that grow by the sea. Many plants can be found on the shingle, such as curled and golden docks, creeping thistle, ragwort, dandelion, yellow-horned poppy and sea campion. Orache and sea thistle grow on the more fertile parts of sandy beaches, as well as saltwort, sea holly, viper's bugloss, knapweed, centaury and sea beet. Wall barley and sea sandwort are found at the edge of the dunes among a variety of grasses. Where the dunes are well established, lady's bedstraw, sea bindweed, cat's ear, scarlet pimpernel, and grasses begin to merge with inland flora. Cord grass thrives on the sea marshes, interspersed with sea aster and sea lavender. Sea thrift grows here too, and on the beaches, but looks its best on cliffs with the vellow-flowered shrub, samphire.

FLOWERING SHRUBS

Among the garden shrubs, spiraeas are still scattered with pink or white blossom, and both honeysuckle and hibiscus are in flower. The great lush trees of Magnolia grandiflora are a magnificent sight.

BIEDS

Swallows on their journey south will be seen on most days, often pausing for rest on telephone wires, while house martins gather on the sunny side of roofs. Both these species and the sand martins will be seen for several weeks. Swifts do not stay as long, and by the middle of the month will have left their breeding sites.

Robins, which have been quiet while they moult, now come out, each singing an autumn song to assert possession of his own chosen portion of the garden. In the fields, as the harvest advances, flocks of pewits, starlings, woodpigeons and finches gather to feed on the stubble.

Waders, which began to leave their breeding grounds in July, now frequent estuaries and the edge of lakes, where the water is shallow enough for them to wade in search of food.

INSECTS

During the warmest days of early August there are more species of butterfly on the wing than at any other time. All those seen in July are still present, and are joined by the second broods of the common blue and small heath. But about the middle of the month the evenings become colder, and as summer turns to autumn the number of butterflies decreases.

Many dragon-flies are hunting over the lakes and even stray some distance overland. Both the brown aeshna and the smaller red common sympetrum will remain right into the autumn. There are also a few damsel-flies still to be seen.

The garden ant takes wing on its marriage flight during hot weather at the beginning of the month.

ANIMALS

August is the month of ripe corn, and in the fields the tiny harvest mouse can be seen, swinging like an acrobat on the ears of corn. Voles multiply at a phenomenal rate at this season, and were it not for attacks by stoats and weasels, they would soon devour all green stuff in the garden. Badgers also perform a useful service by digging out wasps' nests.

Many young lizards and snakes can be seen now, including the grass snake, which hunts in the water, eating insects and small rodents.





September is generally recognized as the beginning of autumn, and towards the end of the month the first frosts may be recorded. This may be a drier month than either July or August.

GARDEN FLOWERS

The herbaceous border still has gay clumps of Michaelmas daisies, and dahlias have now reached show standard. Chrysanthemums, too, make a fine display. Autumn-flowering gentians, such as Gentiana sino-ornata are in bloom, with tradescantia, cimicifuga and tree mallows. Anemone japonica and Echinacea purpures are also flowering in the border against a foil of the attractive silvery foliage of artemesias. Verbena bonariensis will continue to bloom until the first frosts. Many roses are now flowering for the second time. Ferns display a dazzling range of autumn colouring before being cut down by frosts.

WILD FLOWERS

Fleabane is common on many roadsides, and ivy is in flower. When grown on the walls of houses, the latter attracts bluebottles, which tend to find their way indoors through open windows. The autumn crocus, rare as a wild plant, flowers at this time, and the related meadow saffron can be seen in damp meadows.

SHRUBS AND TREES

The huge purple flowers of the sumach or Rhus typhing bloom in September; the deep cerise flowers of Erica Mes D. F. Maxwell are also at their best now, and Clematic Lady Betty Balfour is still in

bloom. The strawberry tree is particularly interesting, for it produces flowers and fruit at the same time.

The first leaves are beginning to turn, and the acers are clothed in exciting autumn colour. The leaves of the Virginia creeper should be a bright scarlet by the end of the month.

BERRIES

September is the season of ripe fruits and seeds. Blackberries are plentiful for picking and elderberries are ripe. The colourful fruits of the rowan or mountain ash and the juicy berries of the vew are eaten by birds, particularly thrushes, as soon as they are ripe. Hawthorn berries deck the hedges, and although these are safe for children to eat, the fruits of the woody nightshade and the honeysuckle are poisonous and should be avoided.

In the garden, Viburnum lantung bears attractive umbels of berries, and the branches of the berberis are strung with translucent red or purple fruits.



BINDS

In the south, the last of the migrants can be seen in large numbers. The adult males are now moulting from breeding to winter plumage, and the young birds, though fully grown, are in dingier dress and look much like the females.

The willow warbler visits gardens again briefly, with the chiffchaff, easily recognized because it is in song. The wheatear is more frequently seen on the open commons.

As long as the weather remains settled and warm, some of the waders will stay for a time at suitable feeding places inland. Among these are the common sandpiper, green sandpiper and ringed plover. Quite large flocks of mallard and tufted duck gather on lakes. Blackheaded gulls are there too, or on the fields where autumn ploughing has started.

INSECTS

There are still plenty of butterlies feeding at garden flowers on sunny days. Most interesting are the migrants, which are beginning their southward movement. The red admiral visits Michaelmas daisies, while painted lady and clouded yellow are seen on clover flowers in the meadows or on hawkweed among the stubble. A fairly common migrant moth, the silver Y, is often found at dusk on petunias, single dahlias, or late flowers of red valerian.

Daddy-long-legs are plentiful in the fields, and frequently come indoors.

ANIMALS

As summer turns to autumn, dead shrews are a common sight in the countryside, for the life of this tiny animal, though a full and active one, is very short. The dormouse is busy eating the hazel nuts as they ripen, storing enough energy to enable it to survive its long winter sleep. The squirrels, though they do not hibernate, are also gathering and storing nuts and, in the wood, the fox can be seen in its autumn clothing of brilliant russet red.

OCTOBER

WEATHER

The quietness of September may be extended well into the month. But October, the wettest month of the year, often brings the first fogs of the winter.

GARDEN PLOWERS

There are fewer flowers in the garden now, though aconitum and the graceful Kaffir lily, Schizonilis coccinea, are colourful. Helianthus sparnifolius still has striking yellow flowers, while Sedum Autumn Sun fully justifies its name. Several veronicas are still flowering, and in the rock garden the bright blue flowers of ceratostigma predominate. Some garden flowers, such as honesty, now have papery seed pods that can be used as indoor decoration.

WILD PLOWERS

in woods and on rough pastures stand the dry stems of summer flowers with their empty seed-heads. Where road



verges have been trimmed the regrowth of grass is lush and soft. Buttercup and clover, dog-daisy, dandelion, speedwell and thistle flower again with the autumnflowering yarrow, knapweed, car's ear and hawkweed.

Behind the combines and balers, the stubble fields show the new growth of spilt corn and weeds.

SHRUBS AND TREES

Erica tetralix is still its bloom, and the flowers of Duboecia cantabrica also persist. Many leaves are turning now, and if the weather is kind, the autumn tints will be at their best towards the end of October. The lilac-purple fruits of the callicarpa are accentuated by the soft pink leaves. The warm brown of beech leaves is most attractive, and there are other shades of brown on oaks and sycamores. The brilliant red of the cherry leaves is often missed, because they fall so soon after turning. Ash leaves fade to a paler green, and those of elm and elder turn yellow.

The leaves will begin to fall with the first frosts and autumn gales. A frost hard enough to cut the dahlias will bring down all the leaves of the walnut and affect even the hardy ash.

BERRIES AND NUTS

Berries are still plentiful, ranging from the red ones of the viburnum to the blue, grape-like clusters on Mahonia aquifolium.

Nuts of all kinds ripen at this time—cobnuts, filberts and walnuts can all be collected. The nuts of the hazel and the sweet chestnut are also ripe, and there are acorns on the oak. The "conkers" of the horse chestnut fall now, and the keys of the sycamore are often seen winging across the garden on the autumn wind.

BIRDS

A few solitary swallows and house martins may still be seen near the south coast. In their place, the winter migrants are arriving, some of them so well known that they are accepted as natives. Pewits and starlings may have come from as far east as Poland or even Russia. Continental tits and finches arrive too, with robins and blackbirds. Two members of the thrush family that are easily distinguished by their plumage and call are the fieldfare and the redwing.

In the fields, flocks of birds have increased, for there is plenty of food available as the land is ploughed for winter sowing. In the evening, only the pewits remain in the fields, Rooks and jackdaws return to roost in woods they have been using for centuries; starlings roost on buildings and in reed beds and shrubberies; woodpigeons also return to woods, and gulls to lakes and reservoirs.

INSECTS

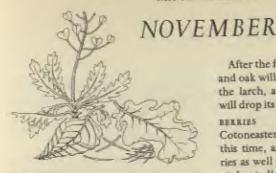
Fields and hedges are covered with gossamer, the intricate webs of money spiders. Covered with dew, and seen in the slanting light of the setting or rising sun, gossamer imparts a silvery sheen to the landscape. Money spiders may number more than 2,000,000 to the acre at this season, and on still, warm days they can be seen floating to new sites on gossamer streamers.

Most hibernating insects retire to their winter quarters in October.

ANIMALS

Several well-known animals are also beginning to disappear from the scene. The dormouse is seeking out the home in which it will spend the winter, and soon the hedgehog will hibernate, though it may still venture abroad occasionally in all but the coldest weather.





WEATHER

The warm days of an "Indian summer" may make the early part of November an extension of autumn. But the later part usually brings the frost, fog and sunless days of winter.

GARDEN FLOWERS

The Kaffir lily still provides a welcome splash of colour. The hardy evergreen climber Clematis calycina comes into flower in November, and in the rock garden there are still a number of hardy gentians.

WILD FLOWERS

Some roadside flowers bloom for the second time now, among them daisy, dandelion, hawkweed, hawkbit, jack-bythe-hedge, red and white deadnettle, and even the violet. As one generation of garden weeds follows another throughout the year, chickweed, shepherd's purse, groundsel, annual grass and others still can be seen.

SHRUBS AND TREES.

One of the most decorative trees at this time of year is the evergreen Arbutus hybrida, with its red bark and clusters of white flowers. Hardy varieties of crica, and veronicas such as Veronica angustifolia and the beautiful V. speciesa Autumn Glory are still in flower, as well as all the ivies. Prumas subhirtella automodis, the fragrant Lonicera standishii, and the winter-flowering Glastonbury thorn (Crataegus menegyna praecox) are just beginning to bloom.

After the frosts, the last leaves of beech and oak will fall in the autumn gales and the larch, a notable deciduous conifer, will drop its needles.

BERRIES

Cotoneasters are particularly striking at this time, as they have bright red berries as well as tinted leaves. Orange and pink spindle berries, euonymus, contrast with the scarlet berries of similar shape of another climber, Celastrus articulatus. Both are easily recognized, for they split to reveal a bright lining. The hardy and decorative Pernettya mucronata has purple or red berries.

BIRDS

Robins are in full song, hedge sparrows and thrushes can be heard, and wrens are singing in woods and shrubberies.

The flocks of birds will persist until the spring, though fluctuating in size and composition. A chaffinch flock, for instance, may include smaller flocks of bramblings, greenfinches, linnets, yellowhammers and buntings; tree sparrows may gather with the house sparrows.

INSECTS.

A few moths can still be seen on warmer evenings, among them angle shades, sword-grass, and silver Y. The red admiral and small tortoiseshell butterflies also venture out on sunny days.

ANIMALS

The red squirrel, now rare in the British Isles, looks its best in November, with its rich chestnut brown coar, tufted ears and bushy tail. Some bats do not go into hibernation until the end of the month, the pipistrelle, in particular, being seen on the mildest evenings.

Newts have now left their ponds, and are hibernating in crevices near the water.



WEATHER

December is the month of least sun but not necessarily of the coldest weather.

GARDEN PLOWERS

A few hardy flowers still brave the elements, including Admis amureusis and the little Iris unguicularis, which will continue to bloom intermittently throughout the winter. Several hardy varieties of crocus can be seen already in sheltered positions. The tiny Menardella macrantha, with its scarlet flowers, and the yellow heads of Sternbergia lutea angustifalia make a gay and colourful show.

WILD PLANTS

In woods and fields there are few flowers. and trees are bare. It is at this time of year that the things usually overlooked are noticed: the shape of trees and the tracery of branches against the sky, the mosaic patterns of bark, the colour of twigs, and the shape of buds. Fungi grow in the woods, chiefly on dead wood. Several mosses send up fruiting stems and are often mistaken for flowers.

SHRUBS AND TREES

The white flowers of the cider gum tree Eucalyptus gunnii are conspicuous, Prumus subhirtella autumnalis is still in bloom, and Chimononthus praecon has fragrant yellow and purple flowers. Two rhododendrons are flowering now, the evergreen Rhodedendron Lee's Scarlet, and the deciduous R. mucromulatum, which has large purple blooms. A wide variety of evergreen foliage is available for Christmas decoration.

KERRIES

Holly berries are characteristic of this season, but there are others just as colourful, including those of pyracantha and Berberis hoskeri. Several varieties of cotoneaster and crataegus still have berries.

Many birds come to the bird-table and water bowl. Starlings and house sparrows crowd out the other birds, and even rooks and jackdaws will sneak up if no one is within sight. When it is very cold. the local robin will accept others from adjoining territories without serious threat; male blackbirds seem to spend more time chasing one another than feeding; and tits, though gregarious, do not always agree when feeding close together. Song thrushes and hedge sparrows, on the other hand, slip in quietly and unobtrusively to snatch the scraps of food.

The nuthatch, great tit and skylark will be heard singing before the end of the year.

INSECTS.

Dancing swarms of winter gnats appear on damp, still days, and even on cold days providing there is no wind.

ANIMALS

Although many mammals hibernate during the winter, others remain quite active, though little is seen of them.

in really cold weather, the stoat may change the colour of its coat and become white, except for the tip of its tail. The mountain hare, found chiefly in northern parts of the British Isles, also turns white in winter. The otter loves cold weather, even snow, and though it usually produces its young in the spring, some may be born as early as December.

The Garden During Summer Holidays

Careful planning can overcome most of the difficulties presented by leaving a garden untended during the growing and harvesting seasons.

TWO WEEKS BEFORE LEAVING

- Clip the hedges. If they are left untouched they will grow too thick for quick attention on return from holiday.
- Complete any summer pruning of fruit-trees and shrubs, as they can produce a considerable amount of unnecessary growth in two or three weeks during the summer.
- 3. Clear all finished crops, such as lettuce, radishes or early peas. Proper planning at sowing time will have prevented a glut during the holiday period. Pick all fruit that is ready and preserve it by making jam, bottling or deep freezing.
- 4. Tie in all new growth on wall plants, on roses growing on posts, and on tornatoes. A storm can do considerable damage to summer growth that has been left hanging loose.

ONE WEEK BEFORE LEAVING

- Deal with any pests or diseases. If they are left even for a week or two during warm weather, they may develop beyond control.
- Remove all wreds, especially those which are likely to flower or seed during the holiday. Frequent use of the hoe in borders and along the rows of the

vegetable garden is the quickest way to

- 7. Mow the lawn very closely as late in the week as possible, and trim the edges. 8. Remove any small runner bean and french bean pods, and mulch along the rows of peas and beans with the lawn clippings to conserve moisture against dry weather.
- 9. Cut off all flower heads and any buds which are likely to blossom during the holiday. If they are left, the flowers will be in a faded condition at the end of the holiday. New buds will form very soon.
- 10. Remove from the greenhouse such plants as primulas, pelargoniums, chrysanthemums and begonias, and plunge the pots in soil in a shady part of the garden where they will require much less water.
- Fumigate the greenhouse with smoke pellets as a safeguard against the spread of an attack by greenfly or white fly.
- Make arrangements with a friend or neighbour to keep an eye on the plants in the greenhouse.
- 13. For advice on the care of house plants during holidays see House Plants.

LAST MINUTE

14. Open fully the top and side ventilators in the greenhouse, as a fresh, buoyant atmosphere will discourage pests and diseases, and help to prevent the temperature from soaring during full sunshine.

Latin Names and their Meanings

Latin is the language universally used for the naming of plants. In early times, it was the only language commonly understood by educated people, and it has continued as the medium for botanical nomenclature.

Flants, like people, have a family name (the generic) and a personal name (the specific). The history of the naming of plants is dealt with more fully in Teday's Garden.

GENERIC NAMES

The generic names of plants may be classified as commemorative, descriptive, foreign and miscellaneous.

They are always spelt with a capital initial.

COMMEMORATIVE GENERIC NAMES

The practice of naming plants after people began in classical times and the following all date from before the Christian era:

Achilles: Achilles, famous warrior, slain by an arrow in his heel

Artemitia: the goddess Artemis

Centaurea: Chiron the centaur

Daphne: daughter of Peneus, pursued by Apollo

Gentiana: Gentius, King of Illyria from

Helenium: Helen of Troy

Hyacimhus: the youth accidentally slain by Apollo

Iris: the goddess of the rainbow

Paesmis: Paeon, physician and god of healing

This precedent was followed by later botanists, and there are many classical of pseudo-classical names the use of which dates only from the 18th or 19th cen-

Amaryllis: a countrywoman, in the works of Virgil

Andromeda: daughter of Cepheus, rescued by Perseus

Cassiope: mother of Andromeda

Hele: daughter of Jupiter and wife of Hercules

Nerme: a sea nymph, daughter of Nereus Pieris: Pierides, a name for the Muses Pleime: the mother of the Pleiades

Tagetes: an Etruscan deity

A great many generic names commemorate botanists of many nations and their friends or patrons. These were often posthumous honours, and the botanist may have had no connection with the plant family that bears his name:

Alstroemeria: Baron Clas Alstroemer, 1736-1794, agriculturist, Swedish

Aubriesa: Claude Aubriet, 1668-1743, botanical artist. French

Begonia: Michel Begon, 1638-1710, patron of botany, French

Buddleia: Adam Buddle, 1660-1715, cleric and botanist, English

Camellia: Georg Josef Kamel ("Camellus") 1661–1706, missionary and botanist, Austrian

Clarkia: William Clark, 1770-1838, explorer, American

Duklia: Andreas Dahl, 1751-1789, botanist, Swedish

Escallonia: Antonio José Escallon y Flores fl.c. 1745-1780, botanist, Spanish

Eschscholzia: Johann Friedrich Eschscholz, 1793-1831, botanist, Prussian

Forsythia: William Forsyth, 1737-1804, royal gardener, Scottish

Fachria: Leonhardt Fuchs, 1501-1566, physician and botanist, Bavarian

Gadetia: C. H. Godet, 1797-1879, botanist, Swiss

Gunnera: J. E. Gunnerus, 1718-1773, bishop and botanist, Norwegian

Kalmia: Petr Kalm, 1715-1779, botanist, Finnish

Kniphofia: Johann Hieronymus Kniphof, 1704-176), botanist, German

Lapageria: Empress Josephine (née de la Pagerie), 1763-1814, patron of botany, French

Lobelia: Matthias de l'Obel, 1538-1616, physician and botanist, Dutch

Lonicera: Adam Lonicer, 1528-1586, botanist, German

Magnolia: Pierre Magnol, 1638-1715, physician and botanist, French

Mahona: Bernard McMahon, 1775-1816, botanist and nurseryman, Irish-American

Matthiola: Pierandrea Matthioli, 1500-1577, physician and botanist, Italian

Monarda: Nicolas Monardes, 1493-1588, physician and botanist, Spanish

Nicotiona: Jean Nicot, 1530-1600, traveller, French

Puschkima Count Apollos Apollosovich Mussin-Puschkin, d, 1805, chemist and collector, Russian

Robinia: Jean Robin, c. 1550-1629, royal gardener, French

Romneya; T. Romney-Robinson, 1792-1882, astronomer, Irish

Rudbeckia: Olaf Rudbeck, 1660-1740, botanist, Swedish

Scienpeulia: Baron Walter von Saint Paul-Illaire, 1860-1910, traveller, German Tradescantia: John Tradescant, d. 1638, royal gardener, English

Wisteria: Caspar Wistar, 1761-1818, scienrist. American

Zimin: Johann Gottfried Zinn, 1721-1759, botanist, German

DESCRIPTIVE GENERIC NAMES

The majority of the names in this class are of Greek or Latin origin, and most of the latter are in fact latinized forms of older Greek terms.

Greek words frequently employed in the construction of generic names are:

akanthes: a thorn anthes: a flower carpos: a fruit

chamae: dwarf, on the ground

chion: snow chloros: green chrysos: golden codon: a bell dendrom: a tree

helios: the sun halles: beauty holles: a berry leaces: white

-epsis resemblance, likeness

ozma: striell phyllon: a leaf poly-: many rhodon: a rose

schize: to cut or split

stochys: a spike

Some descriptive names are a mixture of Latin and Greek, as in cotoneasters from the Greek cotone, a quince, and an abbreviation of the Latin ad instar, meaning similarity or resemblance.

Some descriptive names were already in use in classical times:

Anemone wind-flower

Cyclomen: a circle Delphinum: a dolphin Fritillaria: a dice-box

Gladielus a little sword

Originum: loy of the mountain

Petastes: type of broad-brimmed hat Resnarinus: sea dew

Descriptive names devised by later botanists are very numerous, though sometimes less poetical:

Antirrhimum: anti, like; rhim smout, referring to the seed-vessel

Aster: aster, a star

Calceolaria: calceolus, a slipper

Calendala: calendae, the first of every month, referring to its continual flowering

Callistephus: kallistes, most beautiful; stephus, crown, referring to the seed

Campanula: diminutive of campana, a bell Chionodoxa: chion snow; doxa, glory (glory of the snow)

Chrysanthemam: chrysas, golden; anthemon,

Coreopsis: koris, a bug; opsis, resemblance, referring to the seed

Cosmos: kosmos, beautiful Digitalis: digitus, a finger

Eranthis: er, spring; anthes, flower Galanthus: gala, milk; anthes, flower

Germium: germos, a crane (crane's bill, referring to the seed vessel) Helianthus: helias, sun; anthos, flower

Hemerocallis: hemera, day; kallos, beauty, (day-lily)

Hydrangea: hyder, water; aggeton, a vessel, referring to the seed-vessel

Meconopsis: mekon, a poppy; opsis, similarity

Minulus: minu, an ape, referring to the shape of the combined petals

Muscari: matchus, musk, referring to the scent of some species

Narcissu: narkan, to grow stiff (the plant is credited with narcotic properties)

Nigella: niger, black, referring to the seeds

Parthenocissus: parthenes, a virgin; kissos, įvy (virginia creeper)

Pelargenium: pelarges, a stork (stork's bill, referring to the seed-vessel)

Penstemon: pente, five; stemon, stamens Physolis: physo, a bladder

Polygonatum: poly, many; gone, kneejoints, referring to the roots

Primula: diminutive of primus, the first Pyracantha: pyr, fire; akunthes, a thorn

Sedion: sedo, I sit, referring to the plant's habit of growth

Senecio: senex, old man, because the seedheads look like white hair

Symphoricarpos: symphores, to bear together; carpos, fruit (which grows in clusters)

Tigridia: tigris, tiger

Tropaeolum: tropaion, a trophy, referring to the resemblance of flower and leaf to a helmet and shield, the ancient symbol of victory

POREIGN GENERIC NAMES

Many generic names are derived from foreign languages other than Greek or Latin, often from the plant's name in its native country:

Alchemilla: Arabic Amelanchier: French Aucuba: Japanese Bahiana: Dutch

Berberis: Arabic

Camassia: N. American Indian

Cicherium Egyptian Crocus: Chaldean Genista: Celtic

Ginlgo: Chinese Hoheria: Maori

Hyrsopus: Hebrew

Jasminum: Persian Petuna: Brazilian

Shimmia: Japanese Trollina: German

Tulipa: Turkish Yucca: Caribbean

MISCELLANEOUS GENERIC NAMES

There are a few geographic generic names, including:

Aconium: a hill in Pontica, Asia Minor

Arabis: Arabia

Colchicum: Colchis, ancient Black Sea

region, south of the Caucasus Dictammus: Mt. Dicte in Crete

Iberis: Iberia (Spain)

Tamarix: the River Tamar in Spain A few names indicate the plant's habitat:

Convallaria: of the valleys Gypsophila: a lover of chalk Limnanthes: from limne, a marsh Limenium: from leimm, a meadow Nemophila: a lover of the grove

Saxifraga: of the rocks

Other names indicate the plant's uses:

Anchesa: anchouse, a paint used for the

Calluna kallunein, to sweep

Lavandula: lavare, to wash Lychnis: lychnos, lamp, because its leaves

were used for wicks Reseda: resedo, to calm or soothe; was

once used for bruises

Salvia: salveo, I heal Sapanaria: sape, soap

Scabiosa: scabies, scabies, for which it was а сште

Syringa: syrinx, a pipe, because the wood was so used in Turkey

SPECIFIC NAMES

Specific names usually agree with the generic name in gender, where this is known, and for convenience, all examples given here are masculine gender. Specific names can be classified as historic, geographic, commemorative and descriptive. They are now always spelt with a small initial letter.

HISTORIC SPECIFIC NAMES

Many ancient and obsolete generic names have been retained as specific names, to preserve the historical continuity. Thus Amellus becomes Aster amellus. Other examples include:

Abrotamum: Artemista abrotamam Caprifolium: Lonicera caprifolium Cyanus: Centaurea cyanus

Parthenium: Chrysanthemum parthensum

Ptarmica: Achillea ptarmica Sclarea: Salvia sclarea Thansus: Verbascum thansus Vitalba: Clematis vitalba Xiphium: Iris xiphium

GEOGRAPHIC SPECIFIC NAMES

These are numerous, but not always reliable. Botanists erred or were misinformed about the places of origin of the plants they named; for example, many plants introduced from Japan proved later to be natives of China. The famous Swedish botanist Linnaeus, following classical predecent, regarded indica (Indian) and sinensis (Chinese) as being virtually interchangeable.

The meaning of many geographical names is self-evident, such as ewopaeus, americanus: but some, derived from ancient place-names, are less easy to identify. (Masculine terminations are -us, -icus,

-ensis.)

utlasticus: the Atlas mountains combrious: Cambria (Wales)

contabricus: Cantabria (north-western

Spain)

capensis: the Cape of Good Hope

chalcedomous: Chalcedon, part of Asia

Minor

damascenus: Damascus galliers: Gaul (France) hippmous: Hispania (Spain)

ibericus: Iberia (Spain and Portugal)

historicus: Portugal reapolitamus: Naples nipponicus: Nippon (Japan)

novae-angliae: New England

novi-belgii: New Belgium, the name sometimes applied to the New Netherlands, now New York

possion: Pontica, ancient region on the southern coast of the Black Sea

ruthenicus: Ruthenia, in the Carpathians ringitanus: Tingi, now Tangiers

N.S. formess and florida are descriptive, not geographic names, being feminine

forms of formesus, charming, and floridus, flowery.

Some geographic names are local:

cantabridgemis: of Cambridge edinensis: of Edinburgh exeminsis: of Exeter kewensis: of Krw

others are general:

mustralis: of the south borealis: of the north occidentalis: of the west orientalis: of the east

yet others indicate the plant's habitat:

alpestris: of the lower Alps
alpinus: of the high Alps
campestris: of the plains
lacustris: of the shore
maritimus: of the sea
muralis: of the walls
palastris: of the marshes
pratensis: of the meadows
rivularis: of the rivers
sexatilis: of the rocks
segetus: of the cornfields
silvestris of the woods
tectorum: of the roofs

COMMEMORATIVE SPECIFIC NAMES

The persons honoured in this way usually had a direct connection with the plant.

(Terminations -i, -ii, -iamus, or in the case of a lady, -av; the same name often occurs in both -ii and -iamus forms, and for convenience, only the commoner termination -ii is given here. All these names were formerly spelt with an initial capital.)

allienii: Carlo Allieni, 1705-1804, botanist, Italian

buileyi: F. M. Bailey, 1827-1915, soldier, traveller and naturalist, English

clum: Charles de l'Ecluse, 1526-1609, botanist, French

owheri: Thomas Coulter, 1793-1843, physician and botanist, Irish darwinii: Charles Darwin, 1809-1882, scientist, English

delawayi: Jean Marie Delavay, 1834-1895, missionary and botanist, French

douglasii: David Douglas, 1798-1834, collector, Scottish

fureri: Reginald J. Farrer, 1880-1920, author and collector, English

fortunei: Robert Fortune, 1812-1880, collector, Scottish

henryi: Augustine Henry, 1837-1930, botanist. Irish

kaempferi: Engelbert Kaempfer, 1651-1716, physician and botanist, German

moriesii: Charles Maries, c. 1850-1902, collector, English

mussinii: Count Apollos Apollosovich Mussin-Puschkin, d. 1805, chemist and collector, Russian (see also Puschkinia under Commemorative Generic Names)

pullasii: Peter Simon Pallas, 1741-1811, explorer and naturalist, German

neboldii: Philipp Franz von Siebold, 1796–1866, physician and botanist, German

thumbergii: Carl Pehr Thunberg, 1743-1822, botanist and traveller, Swedish

veitchii: members of the English nursery firm of Veitch, flourishing 1808-1914

vilmarini: members of the French nursery firm of de Vilmorin, flourishing since the mid-19th century

wardii: Francis Kingdon-Ward, 1885-1958, collector, English

willmottige: Ellen Anne Willmott, 1860-1934, gardener, English

wilsomi: Ernest Henry Wilson, 1876-1931, collector and botanist, English

DESCRIPTIVE SPECIFIC NAMES

This is the largest class, and only relatively few examples can be given here. They are almost exclusively of Latin origin.

acaulis: stemless amounts: pleasing

arboriscens: tree-like burbatus: bearded bracteatus: having bracts cuespitosus: tufted cordatus: heart-shaped coronatus: crowned

denticulaus: finely-toothed eximius: choice, rare farinesus: floury, mealy floribundus: free-flowering

fruticous: shrubby glaber: smooth glaucus: blue-green gracilis: slender

grandiflores: large-flowered

hirsulus: hairy hartensis: of gardens hybridus: hybrid inconus: grey, hoary unignis: noticeable

integrifolius: with entire leaves laciniatus: slashed or jagged latifolius: broad-leaved marginatus: edged, bordered

mollis: soft

muschaus: musk-scented mutabilis: changeable mudicaulis: naked-stemmed

odoralus: scented paniculanus: flowers in panicles

plicatus: folded procumbens: trailing

recement: flowers in racernes reticulaus: netted

salicifolius: willow-leaved scandens: climbing sepiarius: of hedges speciesus: showy spinosus: thorny

striatus: veined, striped

stylome: having prominent styles

suaveolen: sweet-smelling tomentosus: felt-like variabile: variable

versicular: of changing colour

villosus: softly hairy

virgatus: twiggy, wand-like

Many descriptive names refer to the colour of the flower:

albus: white

atrosanguineus: deep red aureus: golden acureus: sky-blue coruleus: blue candidus: white

curneus: flesh-coloured curinus: lemon coccineus: crimson

cruentus blood-red ferrugineus rusty florus: yellow, flaxen fulue: tawny

luteus: yellow niger: black

phoeniceus: Tyrian purple purpureus: purple roseus: pirk

ruber: red

testaceus: tile-coloured (terracotta)

viridis: green

Some names indicate the plant's season or duration:

vermus: of spring
uestivalis: of summer
untumnalis: of autumn
hiemalis: of winter
praecox: early
terotimus: late
majalis: of May

nivales: of the snows amuses: annual biennis: biennial perennis: perennial

trimestris: every three months others refer to its uses or properties:

ceriorius: of curriers or tanners

edulis, esculentus edible

officinalis: of the (apothecaries) shops supprius: of brooms or brushes summiferus: sleep-inducing imeterius: for dyeing milio: useful

renematus: poisonous

GLOSSARY

Axil: The angle between the leaf stalk and the stem.

Axillary: Arising in the axil.

Ball: The mass of soil and roots of a potgrown plant.

Bleeding: The excretion of sap, usually

as a result of late pruning.

Blind: A condition in which a plant has no growing point. Frequent in seedlings of brassicas. Hence to go blind.

Bloom: A powdery, waxy substance found on some fruits and leaves, especially those of plants that like dry conditions:

Bolt: When a vegetable plant flowers rather than makes a good heart, it is said to bolt. A common condition in lettuces during hot, dry periods.

Bract: A modified leaf, usually small, often green, at the base of a flower stalk

or behind a flower head.

Brassica: The generic name for the cabbage family.

Break: A branch or fork, resulting from

disbudding or injury.

Bulbil: A very small or secondary bulb that forms on such plants as Lilium tigrimum.

Catch crop: A quick-growing crop, grown on ground prepared for another purpose and harvested without interfering with the growth of the main

стор.

Clamp: A frost-proof structure made from straw and soil for storing root crops in the winter.

Crocks: Pieces of broken flowerpot used to provide drainage in pots and boxes.

Crook stage: (see Loop stage) Cultivar: A cultivated variety.

Cutting: A portion of stem, leaf or root which has been removed from a plant and prepared for independent growth.

Dibber: A wooden tool used for making holes. A slender dibber is used for seedlings and a thicker one for other plants. Hence to dibble in seedlings. Dicotyledon: A plant bearing two seed leaves.

Epiphyte: A plant that grows above ground on other plants and derives nourishment from the air. Hence epiphytic orchids.

Farina: A white flour-like substance that covers stems and leaves of some plants,

such as primulas.

Fastigiate: Erect and tapering in habit. A term used to describe the form of such trees as the Lombardy poplar.

Floret: A floweret, one of the individual flowers which make up the head of a composite flower, such as a dahlia.

Friable: A term used to indicate a good loose condition of soil; easily broken up and workable.

Frond: The whole leaf of a fern.

Glaucous: Covered with a bloom, bluishorev.

Haulm: The name given to the stem of some plants, such as peas, beans and potatoes, after harvesting.

Incurved: Petals or florets curving inward, as in some chrysanthemums.

Inflorescence: A group or arrangement of flowers on a stalk, sometimes forming a flower head.

Internode: The portion of stem between two nodes.

Kind: Genus; plants that vary botanically from one another,

Lateral: Side shoot.

Leader: The main shoot.

Loop stage: An early stage of growth in seedlings of the onion family, when the growing tip is still held by the seed coat. Also called crook stage.

Maiden: A plant in its first year after

grafting or budding.

Monocotyledon: A plant bearing one seed leaf.

Moraine: An accumulation of débris formed by glacial action, Used in rockgardening to describe a bed of similar construction. Mulch: A top dressing put on the soil round plants to conserve moisture.

Naturalize: To grow plants under nearnatural conditions so that they can maintain themselves.

Node: The point at which a leaf grows from a stem.

Open weather: Periods in winter that are free from frost, snow or rain.

Paniele: A type of inflorescence in which there are several forked branches, each with the youngest flowers at the top: for instance, lilac,

Parterre: A level space occupied by flower beds ornamentally arranged.

pH: A symbol used in conjunction with numbers to denote degrees of alkalinity or acidity.

Picotee: A dianthus with light petals edged with a darker colour,

Pleach: To Interlace; the weaving of branches to form a screen.

Pollard: A tree that has been severely lopped so that the head consists of new wood; common practice with willows.

Pot-bound: A plant that has completely filled its pot with roots is said to be porbound. When turned out of the pot, only roots are visible.

Puddle: To dip plant roots into a mixture of soil and water just before planting.

Raceme: A type of inflorescence in which the individual flowers grow all round the main stem, and are attached to it by a small stalk, as in the hyacinth. The lower flowers open first.

Recurved: Petals or florets curving out-

ward or backward.

Rhizome: An underground or surface running stem that resembles a root but produces true roots and shoots.

Scion: A bud or shoot removed from the parent plant for budding or grafting on to another plant.

Sepals: The green outer parts of a flower, collectively forming the calyx.

Set: A name given at planting time to some bulbs and tubers such as onions, shallots and potatoes.

(to) Set: Fruit blossom that has been fertilized and started to form miniature fruit lets is said to have set.

Slip: A cutting prepared by pulling a side shoot away from the main stem, so that a piece of the stem comes away at the same time.

Spadix: A column-like spike of male and female flowers usually surrounded by a spathe, as in the arum lily.

Spathe: The large bract surrounding the spadix in such plants as the arum lily.

Spit: One spade's depth of soil, usually ten inches.

Spore: The minute "seed" of ferns, mosses and fungi.

Sport: A shoot that differs (usually in flower colour) from the parent plant. Common in chrysanthemums.

Sp.: Species (plural: sps.).

Square-area rainer: A device on an Iron stand fitted to the end of a hose. Water passes through a "rainfan" which moves slowly backward and forward covering a square area with artificial rain.

Station sowing: The practice of sowing seeds at the distance apart at which the plants are to grow.

Stigma: The sticky top of the style which receives the polien grains.

Stolon: A shoot running along the surface of the soil and rooting at intervals. Strawberry runners are an example.

Stool: A plant used only for propagation. A term commonly applied to chrysanthemum plants that are kept through the winter to produce cuttings.

Strike: To give to a cutting conditions of cultivation inducive to root production. Once the roots have formed, the cutting is said to have "struck"

Style: The stem of the female part of the flower that connects the stigma to the ovary.

Thong: A piece of root used as a root cutting for propagation.

Tilth: The texture of the soil: a fine tilth

resembles dry crumbs.

Top fruit: Apples, pears and stone fruit. Truss: A loose bunch of fruit or flowers as in tomatoes and rhododendrons.

Tubercle: A small tuber-like growth.

Type plant: The original species.

Variety: A variation of the species of any plant.

BIBLIOGRAPHY

ANIMALS

British Mammals, L. Harrison Matthews. Collins.

A Field Guide to the Rieds of Britain and Europe, Roger Peterson, Guy Mountfort and P. A. D. Hollom. Collins.

Insect Natural History, A. D. Imms, Collins.

CONSTRUCTION

Garden Carpentry, G. B. Walkden. Collingridge. Garden Making by Example, G. C. Taylor. Country Life.

EXHIBITING

Flower Growing for Shows and Growing Vegetables for Show, E. R. Janes. Penguin Books. Horticultural Show Handhook, Royal Horticultural Society.

FLOWER ARRANGEMENT

Flower Decoration; Flowers in House and Garden; A Garden Novebook; Summer and Autumn Flowers; Winter and Spring Flowers; How to Do the Flowers; A Constance Spry Anthology; Party Flowers; Simple Flowers; Favourite Flowers, Constance Spry, Dent.

FLOWER GARDEN

Alpines for Trouble-free Gardening, Alan Bloom, Faber & Faber.

Delphiniums, Ronald C. Parrett. Penguin Books.

Gladioli and Dahlias, Chas. W. J. Unwin, Collingridge.

Greenhouse Chrysanthemans, E. Morley Jones. Collingridge.

Guide to Border Plants, Frances Perry. Collins.

Guide to Bulbs, Patrick M. Synge. Collins.

Irises for Everyone, N. Leslie Cave. Faber & Faber.

Lilies and Their Cultivation, M. E. Leeburn, Foyle.

The Modern Florilegium, G. S. Thomas. Sunningdale Nurseries.

Orchids and Their Cultivation, David F. Sander. Blandford Press.

Perennials for Trouble-free Gardening, Alan Bloom. Faber & Faber.

Rock Gardens, E. B. Anderson. Royal Horticultural Society and Penguin Books.

The Rose in Britain, N. P. Harvey. Souvenir Press.

Sweet Peas, Chas. W. J. Unwin. Collingridge.

FRUIT

Apples and Pears, H. M. Stationery Office.
Bush Fruits, H.M. Stationery Office.
Came Fruits, H.M. Stationery Office.
The Fruit Grower's Handbook, N. B. Bagenal. Ward Lock.
How to Grow Soft Fruits in the Garden, H.M. Stationery Office.
Vineyards in England, edited by Edward Hyarns. Faber & Faber.

GENERAL GARDENING

All the Plants of the Bible, Winifred Walker, Lutterworth Press, Amateur Gardening Handbooks, Collingridge.

BIBLIOGRAPHY

Fertilizers and Manures, Keith Paisley. Collingridge.
Garden Shrubs and Their Histories, Alice M. Coats. Vista Books.
The Gardener's Companion, edited by Miles Hadfield. Dent.
Gardener's Earth, Stanley B. Whitehead. Dent.
Gardening for Fun (for children), George Scurfield. Faber & Faber.
Gardening in Britain, Miles Hadfield. Hutchinson.
Lumn and Sports Grounds, Martin A. F. Sutton. Sutton & Sons Ltd.
Planees in Gardening, Miles Hadfield. Routledge & Kegan Paul.
Soil, G. V. Jacks. Nelson.
The Reason Why of Gardening, W. E. Shewell-Cooper. Herbert Jenkins.
Water Gardening. Frances Perry. Country Life.
The Winter Garden, Stanley B. Whitehead. Dent.

GREENHOUSES

Cleche Cultivation, G. B. Walkden. Collingridge.
The Cool Greenhouse, George W. Robinson, Penguin Books.
Protected Cultivation, Keith Paisley, George Newnes.

INDOOR GARDENING

Cacti for Decoration, Vera Higgins. Blandford Press
House Plants, Margaret E. Jones, Penguin Books.
The Rochford Book of House Plants, Thomas Rochford and Richard Gorer, Faber & Faber,
Succulents in Cultivation, Vera Higgins, Blandford Press.

PESTS, DISEASES AND WEEDS

Agricultural Chemicals Approval Scheme—List of Approved Products, Ministry of Agriculture, Fisheries and Food.

Diseases of Vegetables, Donald E. Green. Macmillan.

Garden Weeds and their Control, Stanley B. Whitehead. Dent.

Harticultural Pests-Detection and Control, G. Fox Wilson, Crosby Lockwood.

Identification of Seedlings of Common Weeds, H.M. Stationery Office.

Pesis of Ornamental Plants, P. Becker. H.M. Stationery Office.

Plant Diseases, F. T. Brooks. Oxford University Press.

Weed Control Handbook, edited by E. K. Woodford, Blackwell Scientific Publications.

PRESERVING

Home Food Preservation, Cyril Grange, Cassell.

Jams, Preserves and Picèles, Rosemary Hume and Muriel Downes. Chatto & Windus.

TREES AND SHRUBS

The Book of Flowering Trees and Shrubs, Stanley B. Whitehead, Frederick Warne.

British Trees, Miles Hadfield, Dent.

Climbing and Trailing Plants, S. A. Pearce. Collingridge.

Shrubs and Trees for the Smaller Garden. Frances Perry. C. Arthur Pearson.

VEGETABLES

The Complete Vegetable Grower, W. E. Shewell-Cooper, Faber & Faber.

Peas and Beam in the Garden, H.M. Stationery Office.

Tomato Growing in Gardens and Allotments, H.M. Stationery Office.

Wild and Garden Herbs, Kay N. Sanecki, Collingridge.

INDEX

VOLUME 1: 1 to 448 VOLUME 2: 449 to 872 VOLUME 3: 873 to 1264

Numerals in bold type indicate the main reference to the subject concerned Numerals enclosed by brackets indicate illustrations

Acacia, scale on 401 (alse (494), (502), 524 Acarna 280, 365 Acquiholimon 283, 293; 294 Acanthus 182, 220, (561), 572, 1100 Acer 28, (304), 505, 531, 564, 577, 1104, 1107 Achilles 183, (194), 280, 283, 293, 295, (417), 370, 376

Aconitum 184, (195), 217, 220, 480, 1100 Acorna, growing 1960 Acertas (466), 472

Actinidia 577 Adder 1169, (1169) Adder's tongue (1082) Adianum (581), 583, 586, 677

Adamis 148 Adromischia 619

Aechines rhadicyanes 633, 642, 664, 665 deunium 619 Aethinimenia 183, 293, 294, 295, 1109

African daisy 149 African hemp 967 African marigold 167

African violet 659, see also Saintpaulia Agapanthus 184, (195), 217, 1107 Appre 619

Aperagum [48, (155), 266, 1112 Aggregate, for ring culture 902 Aglauneniu \$42, 664, (675), 676

Agropyria repeni (416) Agrostemnia 148

Agrostis 590 Air layering 134, (135)

Aira 590 Ajuga 184, 217, 220, 280, 480, 562, 563, 578, 1100

Akrbin 541 Alchemillia 572, 1100 Alexandrian laurel 1103

Alexe 468 4linnar 473 Alkanet 149, 185

Alkathene 1115 Alfament, see Cryptogramma 4Hmm 280, 315, 866

Almonds 809, (810), 1090 discuses 371

pruning 489, 491 varieties 809 Aloe 620, (620), (631)

flowering 523

унгістина 620 Alopecurus 593 Alpine toadflax 288. Alpines 279-295

for sink gardens 1109 history 20

Almines - continued in moraines 302 late-flowering 294

propagation 281 suggested plants 283, [284-292]

Alchara 185 Aluminium plant 658

Alpreum 148, (154), 266, 281, 283, 293, 1080, 1112

Amaranth 148 Amuranthus 148

Amaryllin, seed sowing 122

Amelianchier 499, 505, 530, 531, 1104 American blueberry (528), 329

American gooseberry mildew 352, (358) American pondweed 479

American awamp tily 476

Amitrole 415 Amphibia, see Frogs, News, Toads

Amurharis 479

Anagallis 148, 480 Apapal 711

Anaphalis 185, 563, 576

Anchora 149, 185, (194), 220, 481, 572 propagation 128

(nationace 283, (284), 293, 294, 295, 1081, 1109 Anzinone 284, 315, (316), 1100

types and varieties 315 Angelus 572, (859), (863), 865 Anglosperms 47, (48)

Animals in the gurden 1159-1193, 1194

Anise (839), 865 Annelida 1182

Annual chrysanthemum 152 Annual mendow gram (412)

Angual scablogs 167 Annuals 144-168 autumin-sown 145

border (146) diseases 145

dwarf, for interplanting with roses 266 exhibiting (069

for children's gardens 1076, 1078 greenhouse sowing 14h

grey mould on 353 half-hardy 145, 1078 propagation 914 propagation 118

recommended plants 148 under cloches 892

Antenmarin 284, 293 Anthonis 185, 220, 284, 576, 866 Anthericam 186, 217, 220, 1100

Antholysu 186 Anthrives creefelium \$66 Anches June 642, 664, 665, (667)

Amirechimme 149, (154), 1112 discuses (362), 365, 371 pests 404

Ants 381, (382), 641, 1187, (1187) Appro 590, (591)

Aphelandra squarrasu laui sae 642, (644) Arbrez 489 Aphids 247, 380, 381, 385, (386), 391, (391), (394), Arbitrar 499, (501), (503), \$05, 530 (395), 397, (398), 401, 404, Archangel, variegated yellow 1106 468, 786, 1185 Archways 1144 as carriers of diseases 349 Arctoris 149 black 986 Arenaria 284, 295, 1109 control of 392 Arlsgrum 1078 derris liquid for 169 Aristolochia 542, (542), (569), 572, 1103 Aponugeton 463, 473 Armeria 186, 217, 284, 293, 295, 1081, 1109 Approcactus 620 Armillaria mellea 368 Apple and blackberry jam 834 Arrhenusheeum 579, 593 Apple and elderberry jelly 839 Arrow arum 475 Apple and plum butter 840 Arrow-head 476, 1082, (1083) Apple and tomato chutney \$44 Arrowhead ivy 652 Apples 691 Artemisia 186, 217, 505, 550, (550), 560, (562), bud development (710) 571, 576, 863 865, 871 bush trees, delayed open centre (698), 699 abrotunum 17, 505 open centre 699, (706) Arthropoda 1182 buying trees 353, 692 Artichokes 988 cordon trees 491, 699, (700), (701) globe 577, 980, (982) deep-freezing 856 Jerusalem 981, (982) diseases (350), (351), 352, 353-364, 365, 709 varieties 981, 982 dwarf ovramid (693) Arum lily 478 espalier (693), 704, (704) Anuneus 187, 217, 220, 480, 1100 exhibiting 1062, (1063) Arundinuria 480, 567, 571 (574), 590, 1101, 1104 family trees 697, 703 Aramato 590, 593 ginger 833 Anclepias 481 goblet-trained tree (680) Ash, seeds of 70 half-standard (692), 697 Asparagus 976, 983, (984) 神川平 837 beetle 984, (1186) l'arcure training 702, (703) diseases 376 pests 391, 392, 393, (394), 396, 397, 709 general care 984 millar trees (693), 701, (702) varieties 984 pruning 705 weed control 420, 424, 983 seeds 70 Asparagus peas 1043 spindle bush 703, (705) Asperula 1100 standard trees 697 Asplenjum 587, 677 training 697 Aster 118, 187, (194), 1087, 1100 varieties (690),712,(712),(713),(714),(716),(717) alpine 284 wine 828 diseases (366), 371 Applemint 868 mildew on 188 Apricots 718 pests 404, 405 chutney 845 versicillum wilt on 188 curd 840 Autibe 189, (195), 220, 481, 565, 1100 jam 834 Astranția 189, 481 pruning 491, 720 Astrolopa 620, (620) tree shapes (719) Astrophytum (620), 621 varieties (718), 720, (720) Ashyrtum 183 Aquarium, glass 1081 Airiplex 566, 571, 376 Aquatics, ornamental 472 Aubergines, see Egg-plants planting 467 Aubrieta 284, 293, 1112 tubmerged 479 cutting back 281 Aguilegia 186, (198), 220, 1100 seed 282 Arabis 1112 Aucuba 499, 505, 530, 531, 530, 560, 571, 1101 cutting back 281 Auricula 1112 Arachnida 1182 Autumn crocus 316 Aralia 643, 664, 666 Avenu (590), 591 Arquegria 505 Avens 204 Arancaria arnucuna, history 21 Avocado pears 677, 1085 Arbor-vitae (493), (502), 528, 559 Azaleas, see also Rhododendrons

Azuless — continued history 20, 21, 22, 24 varieties (532), (537), 538 Azolla 478

B

Baby blue eves 164 Bachelor's buttons 518 Bacteria 1197 action on compost III Bacterium tumefaciens 365 Badminton court (60%) Balloon beliffower 289 Ballota 561, (562), 576 Balm 860, (860), 865, 1113 Baltam 147, 160, 1078 tree 1091 Bamboo 480, 499, 501, 590, 1101 dwarf 567, 1104 Banded rose sawily 409 Banks. Sir Joseph 34 Banksian rose 546 Barberry 506 Bark, fibre, crusbed 1097 formation of 54 nicking 490 ringing 708 slitting, on apple trees 709, 778 Barnel cactus 623 Basic stag 102 for roses 264 Banil (864), 865 Bastard trenching 94 Bats [161, (1161) Bay (864), 865 Bears 985 broad 985 diseases (374) general care 986 seed 118, 119 varieties 986 care before holidays 1217 diseases 349, (374), 376 dwarf or french 987, (988) for intercropping 1000 varieties 939 exhibiting 1067 flageolet 990 varieties 990 haricot 990 varieties 990

Beans - continued in children's gardens 1077 pests 384, 385, (386), 388, 404 runner 990 varieties 993 galting \$53 weed control 420 Bear's breeches 182 Beds, see also Borders island 177, (187), (190), (193) marking out 1120, (1120),(1121) raised (1099), (1138) Bee balm 130 Beech 552, see also Fugus copper 552, 565, (568) bedge 489, 360 trees, propagation 132 Bers 1187, (1187), (1188) Beetles (391), 396, (403), 404, (407), (1185), 1386, (TE86) Beetroots 993, (994) bleeding 994 diseases (374) seed 119 varieties 994 wine \$29 Reporte 118, 149, 643, 665, 676, 906, 967, 1101, 1107, 1112, 1115, 1217 diseases 371 fibrous-rooted 906 growing temperatures 906 pests 400, 401, 408 pricking out 123 propagation 127 seed 118 shading for 906 tuberous-rooted 906, (908) propagation 131 Begania res 127, (644), 664, (667) teaf cutting (126) Bell flower 170, 190 Bell-glasses 125 Bellis perennis 1101, 1112 Bent grass 590 Berberidonala 542 Berberis 499, (505), 306, (506), 530, 331, 550, 565, 1100, 1101 Bergamot 209, 484, 859, (839), 865, (867), [11] Bergenia 189, 217, 572, 1100, 1104 Berries, poisonous 1200 Between 190 Betony 190 Betula (492), (502), 507 Bible, plants mentioned in 1988-1993 Riconials 169-173 for children's gardens 1076 propagation [18] recommended plants 170 "Big bod" mite (390), 392

Bilberries 804, (804)

and the same of th	
Billbergia nutans 676	Blue poppy, see Meconopsis
Bindweed 153, 181, 415, (416), 421	Bluebells 947, 1101
Birch 507	pests 408
seeds 70	Blueberry (528), 529, 808, (808)
silver (492), (502), 507	propagation 808
Bird's pest philodendron 658	Blue-ryed Mary 289
Birds, in the garden (1158), 1170, (1170), (1173-	Bocconia, ser Macleaya
1177), (1179), (1180)	Bog arum 473
bath for 1097	Hog bean 474
identification 1171	Bog gardens 462
law concerning 1195	grass for 593
nest boxes for (1171)	plants for 462, 480
scarers for 1041, (1041)	Bog pimpernel 480
Bishop bug (402)	Bone, manure 104
Bishop's cap 621	meal 103, 104
Black currants 725, 1063	Bonfires, law relating to 1195
cuttings 726, (727)	Borage 858, (859), (860), 866, 1113
diseases 168, 369	Borders, see also Beds
floeding 725	annual 145, (146)
gall mite 392	chrysanthemums for 224
jam 834	foliage for 563
jelly 839	herbaceous 174, (178), (182)
reversion 393	marking out 1120
syrup 854	mixed 177
varieties (725), 727	narrow 176
weed control 415	perennial 174
wine 829	Borecole, are Kule
Black velvet 658	Botanic Gardens 32
Blackberries 721, 1063	Cambridge 32
adventitious roots 53	Edinburgh 32
crown gall 365	Kew 34
cultivation 723	Liverpool 34
disease spores on 723	Northern Horticultural Society's 34
diseases (358), 365	Onford 32
harvesting 724	Royal Horticultural Society's 34
layering 133	Botrytis cineres 356, 364
leaf-bud currings (126)	Bottle gardens 674, (674), (675), (676)
ornamental 523	
propagation 132, 723, (723)	plants for 676
	Bottling 846
varieties (721), 724, (734)	equipment 846
wine 829	fruit 846
Blackberry and apple jam 834	vegetables 846, 849
Blackbirds 1171, (1176)	Boundary fences 1140
Black-eyed Susan 167	Bouquet garni 864
Blackfly 385, 986	Bowling greens 609, 613
Hladder campion (418)	Bowls for indoor plants 679
Bladder senna 510	Bowstring homp 659
Blaikie, Thomas 20	Box 551, 560, 578, 589, 861, 1107
Blanket flower 157, 201	Boysenberry 807
Blanket weed 173	Bracken (423)
Blanket weeds 469	dried, in flower arrangement 961
Blechnum 587	Beambles, control of 415, 421
Bleeding heart 197	Branching lurkspur 156
Blight 360, (366), 372, 373, 377, (378), 935	Brass buttons 473
Blind seedlings of brassica plants 975	Breaking 349, 372, 373
Blind worm 1169, (1169)	Bridges [15], (1151-1154)
Blinds 886, (886)	Brica 391, (591)
Blue cedar (492), (502), 509	Broccali 996
Blue colorado spruce 366	curding 996
Blue Indian orchid 922	general care 997
Court Street, Street, and Street, Street,	British cities 233

Broccoli, curding - continued harvesting 997 varieties 997, (998) diseases (374) sprouting 997 Cabbages 1001, (1003). general care 998 buying plants 353 varieties 998 coleworts 1005 Brome grass 591 diseases 353, (374), 376 Brompton stocks 172 pests 384, 385, (386), 388, 389 Browner (590), 591 red 1005, (1005) Bronze-leaf 484 varieties 1005 Broom, see also Cytisus Savoy 1006 dispersal of seed 75 varieties 1006 pruning 488 spring 1001, (1002) Brown scale (390), 397, 409 varieties 1002 Brown-rot fungin 734 summer and autumn 1002 Brunnera 481, 572 varieties 1004 Brussels sprouts 999, (999) weed control 430, 424 intertropping 1000 winter (1003), 1004, (1005) pesta 385 varieties 1004 varioties (969), 1001 Cacti and succulenza 614-631 Bryaphyllium 621, 626 arcoles 615 Bud or eye cuttings 127 diseases 619 Bud-cuttings from woody stem (127) epiphytic 615 Budding 136, (137), (138) for living-room 616 Buddleia 22, 491, 499, (506), 507, 1101, 1103 pests 618 Buffalo currant 524 Culandrinia umbellata 1081 Bughane 193, 481 Calathea laulsae 643, 665 Bugle 184, 480 Calcrolaria 118, 149, 1112, 1115 Bugloss, Siberian 481 botrytis on 364 Bulbs 305-320 Calendar, nature 1201-1216 and corms 305, (306). of work 425-447 for miniature gardens 673 Calendala 149, 1101, 1112 forcing 667, 914 Calico bush 518 growing on water 670 Californian poppy 156, 1076 in children's gardens 1083 Californian redwood 566 in town gardens 1101 Californian tree poppy 567 in window boxes 1111 Calla 473 planting 305, (307), (308), (309), (310), (313) Callistephns 150 weeds 420 Calluna 507, (507), 530 Bulky manures, use of 87 Callus 128 Bullace wine 829 Calomel dust 373, 374, 376 Bullaces, ser Plums Caltha 66, 473, (473). Bulrush 476 Camarria 315, 481 Buphrhabnum 481 Camellia \$07, (508), 571, 944, 1101, 1103, 1107 Bupleneum 571 diseases 371 Burning bush 160, 197, 1078 history 21, 22 Burro's tail 630 pest 401 Bush fruit 725, 742, 790 propagation 127 unusual 80% pruning 488, 499 Bush roses, 100 Roses seed 119 Busy Lizzie 160 soil to Butomus (466), (472), 473 Campanula 176, 190, 217, 220, 280, 285, (285), Buttercup 67, 415, 599, (602) 293, 295, 1081, 1100, 1109, 1112, 1115 creeping 411, (417), 786 Campernelle 312 grass-leaved 290 Campion 161, 208 Butterflies and moths 385, (386), (189, (1190-1193) Campsis 542, 1103 pollination by 71 Canary creeper 168 Burnerfly bush 307 Canary Island by 652 Busines 551, 560, 578, 1101 Canary ivy 652

Candle plant 631	Cat's ear (602)
Candytuft 160, 266, 376, 1078, 1106	Catalpa 508, 530
Cane fruit 721, 749, 786	bignoniaides (500), (503), 308, 1104
unusual 807	Catananche 192, (199), 220
Canna 1112	Catch crops 972
Canning fruit and vegetables 851	on celery ridges 1014
Canterbury bell 170	spinach 1053
Cape gooseberry 130	Caterpillars 385, 393, 405
Capsella bursapastoris (413)	Catherine-wheel plant 661
Capsid bugs 247, 393, 397, 404	Catkins 551
Captan 350, 351, 354, 359, 367, 371, 373, 377	Carmint 1107
Caralliania 621	Cancasian whortleberry 529
Caraway (859), 866	Cauliflowers 1011, (1012)
Carbohydrates 62, 65	"blindnesa" 1012
Carbon dioxide in leaf 62	exhibiting 1065
Cardamine (480), 481	pests 385
Cardoons 561, 577, 1007	varieties 1013
varieties 1008	winter 996
Curnations 929-941	Ceanothus 491, 499, 542, 551, 560, 1101, 1103
annual 156	pests 409
border 929, (929), 930, (930)	Cedar 508, see also Cedrus
layering of 133, 932, (933)	of Lebanon 18
pests 935	pencil 557
picotee 930	western red 1143
propagation 133, (931), 932	Cedrus (492), (502), 508, 566
varieties (929), 935, (935)	Celeriac 1013
woods 932	varieties 1014
buying 929	Celery 1014
calyces splitting 932, 1069, (1070)	diseases (374), 1015
Chabaud or marguerite 156, 929	earthing up 1016, (1016)
diseases 362, (362), 364, 371, 932, 935	exhibiting 1017, 1065, (1065)
exhibiting 1069, (1070)	general care 1015
perpetual-flowering 929, (930), 936, (941)	pests 384, 389
disbudding (939), 940	seed 119, 1015
pests 400, (403)	self-blanching 1017
propagation (937), 938	varieties 1017
stopping (940)	wine 829
varieties (934), (935), 941	Celery fly 385, (386)
pipings (127), 128	Celoria 147, 152, 1111
Carpeting plant, nilver 577 Carpinus 551, 560	Centaurea 152, (154), 192, (198), 217, 220, 1078, 1079, 1112
Carrion flower 631	Centaury 192
Carrots 1908	Centipodes 1183, (1183)
early 1008	Centranthus 192, 217, 220, 1100
eshibiting 1064, 1065, (1065)	Cephalaria 192
general care 1009	Cephalocereus 621
in children's gardens 1085	Cerasthan tomentosum 280
pests 384, 383, (386), 389, 1009	Cercis (494), (502), 509, 530
seed-saving 70	Cereus 621
seeds 119	Ceropegia 621
sowing seed 120, 1008	Charmoneles 491, 530, 543, 961, 1101, 1103, 1107
varieties 1010, (1010)	Chafer grubs 381, (382)
weed control 420, 424	Chalky ground 34, 887
wine 529	plants for 220, 530
Cart-wheel plant 653	Chammaccereus (621), 622
Carum carri 86h	Chamarcyparis (495), (502), 509, 556, (258), 560,
Carympteris 491, 499, 508, 530	(562), 566, 367, 110
Candrila 564, 367	Chameleon plant 646
Castor meal 86	Chamomile (#59), 866, (867)

```
Chrysanthemums, border - continued
Chapeau de Napoleon 525
                                                          diseases (362), 364
Cheal's weeping cherry 1079
                                                          incurved 230, (230)
Cheiranthus 170, (170), 285, 293, 294
Chelone 192, (199), 217, 220, 1100
                                                          incurving (230), 231
                                                          pests 222, 223, 228, 383, (402), 404, 405, 408
Chenopodium album (413)
                                                          planting 214
Cherries 729
  black, conserve 836
                                                          pompons 233, (233)
  hutter 840
                                                          propagation 222
                                                          reflexed 231, (231)
  diseases (351)
                                                          single 233, (233)
  fan-shaped trees (681), 730
                                                          Hopping 228
    pruning and training 733, (733), 739
                                                          tying (225)
  flowering forms 523
                                                        exhibiting 1070, (1070)
    history 24
                                                        greenhouse 234
    pests 404, 405
                                                          American sprays 237
    pruning 489, 491
                                                          anemone-flowered 236
  iam 834
                                                          care before holidays 1217
  shapes of trees (734)
                                                          December flowering 237
  sour 491, 738
                                                          decorative 221, (235), 236
    diseases 369
                                                          incurves 236
    varietles 740
  sweet 491, 729
                                                          large exhibition 235, (235)
                                                          November flowering 235
    planting 730, (730), (731)
                                                          pests (402), 408.
    types of tree 729
    varieties (728), 735, (736)
                                                          pompons 236
                                                          singles 236
  wine 829
                                                          stopping 235
Cherry pie 157
                                                        history 21, 22
Chervil $59, (859), $66, (868)
                                                      Churneys 844
Chickweed (412), 599, (602)
                                                      Cichorium intybus (418)
  control of 420, 602
                                                      Cigar plant 153
Chicons 1018
                                                      Cimicifuza 193, 481
Chicory (418), 1018
                                                      Cinerario 118, (904), 906, 1113
  varieties 1018
                                                        pests 405, 408
Children's gardens 1074-1087
                                                        varieties 907
Chilean slory flower 345
                                                      Cinquefoil 213
Chilean potash nitrate (02
                                                        shrubby 522
Chilean potato tree 547
                                                      Cirrus aetarctica 645, 665
Chimney bell flower 170
                                                      Ciarro 498, 499, (508), 510, 530, 531
Chimonanthus 491, 543, 1103
China aster 152, 1112
                                                      Citrus fruits from pips 677, (677)
                                                      Citrus, scale on 401
China, planus from 16, 34
Chinese forget-me-not 172
                                                      Cladosporium fulvum 353
                                                      Clarkia 144, 152, 1078
Chinese honeysuckle 555
                                                        diseases 364
Chinese lamern 130
                                                        history 21
Chinese lily 326
                                                      Clamp (1009), 1010, 1046, (1046)
Chinese paepny 209
                                                      Clary 167
Chinese pink 156
                                                      Christocarius 622
 Chiemodoxa 316, 1083, 1112
                                                      Clematts 491, 530, 543, (543), 1100, 1103, 1113
Chives (860), 866, 1113
                                                        alpina 285, 491
   рениь ЗВВ
                                                        history 24
 Chlorophyll 54, 57
 Chlorophytum capense variegatum 643, (645), 665,
                                                        nowders mildew on 365
                                                        propagation (116), 133
                                                        seeds 70
 Chairra 499, (509), 510, 530, 531, 551, 360, 571
                                                      Cleame 153
 Christmas cactus 631
                                                      Clarodendrum 499, 501, 510
 Chrytanthemann regetain (423)
                                                      Click beetles 384
 Chrysanthemums 193, 217, 221-237, 961, 1100,
                                                      Climate, humidity of 65
                                                         in evolution of the garden 16
   annual 152
                                                         in relation to peats 380
   border 222, (230), (231), (233)
                                                      Climbers and wall plants 539-547
     as foliage plants 576
```

Climbers and wall plants - continued	Common turkscap 329
suggested plants 541	Compost-114
supports for (540), 541	Box 112. (115)
Cloches 891, (892), 1059	making III
construction 893	micro-organisms in 112
erops for 892	merilization 121
five-strip system (891), 892	use of 113
Clock golf, lawn for 613, (613)	Compton, Henry 20
Cloud grass 590	Cone flower 167, 214
Cloud plant 157	Conifera, for bedging 556, 560
Clover (417), 602, (602), 778	diseases 365
mecoprop for 411	dwarf 672
Club-root disease 353, 374, 376, 389, 975, 1023,	pruning 489, 491
1025, 1055	Conophytum (621), 622, 628
host plants of 352	Conserves 836
Cobnuts and filberts 491, 810, (811)	Construction in the garden 1116-1157
for hedges 551	Convallaria majalis 28, 1104
varieties 812	Convolvulus (150), 153, 576, 983, 1076, 1112
Cobweb houselock 291	gryensis (416)
Cochlioda 927	Copper beech 552, 565, (568)
Cockchafer beetles (403), 404, 1186, (1186)	Coral Bower 205
Cockscomb 152	Coral plant 542
Cocksfoot grass 593	Corropsis 153, 196
Cocoa palm 645	Coriander 866
Coras weddeliana 645, 664	Contamilian attions 866
Codimenta 645, (648), 664, 665, (667)	Corkscrew rush 474
Codomopsis 285	Corms, buying 353
Coffee fern 588	construction 305, (306)
Cola 591	development 334, (335)
	diseases 348, 353
Colchicine, mutation by 25	Corn cockle 148
Culchicum 25, 316, (317) needs 70	Corn marigold (423)
	Corn salad 1019
Cold frame 122, 899 Coleus 63, 1101, 1112, 1115	varieties 1019
Dests 400	Corn spurrey (423)
Coleworts or collards 1005	Cornelian cherry 510
Collinson, Peter 20	Cornflower 146, 152, (342), 1078
	Cornish heath 513
Colorado spruce 566	Cornus 491, 500, 501, 510, (575), 578, 1101
Columbine 186, (341) Columbia occurridium 646, 663	Coronilla 564, 566, (574)
Colures 500: 510, 530, 531	Cortaleria 592
	Carylus 551, 560, 565
Common briar 265	Curyne-bacterium fascians 365
Common flax 161	Coryphantha 622
Common furnitory (413)	Cos lettuce, ree Lettuce
Common Green Capsid (190), 393, 404	Cosmea 153
	Casmat 146, 153, (155)
Common horsetail (419)	Commenter 500, (509), 510, (511), 530, 531.
Common juniper (301), 557, (559)	544, 552, 560, 564, 578, 1101, 1103, 1104
	alpine 285
Common laburnum 318	
Common laurel 523, 1102	pests 409 seed 119
Common meadowsweet 482	Cotton thistle 564, 577
Common Mussel stock 720, 773	Corple 280, 473
Common palypody (1982)	
Common prives 555	Cotyledon 622
Common red poppy (422)	Cotyledon 48, 123
Common speedwell (416)	Couch grass (416)
Common spindle tree 513	Cowslip (342)
Common spruce 558	wine 829
Common sunilower 157	Coys, William 32

Crab apples 17, 520, 806 in flower arrangement 944, 958 pests 404, 405 seed 119 spiced 844 varieties 806 Crambe 196 Cranberries 803 varieties 803 Crane fly 383, 603, (1188), 1189 Cranesbill 201 Crussula (614), 622, (622). leaf-cuttings 618 time of flowering 619 Craturgus 511, (512), 530, 552, 560, 1104 Crazy paving, ree Construction Creeping buttercup (417) Creeping fig 650 Creeping Jenny 570, 1112. Creasote 496 Cress 1034, 1076, 1085 Cress hog 1085, (1086) Crested moss 525 Crested news, male (1167) Cresylic acid 353, 356, 400 Crevice planta 294 Crimson dwarf 565 Crimson-leaved vine 561 Crinkled metal plant 656 Crimin 196 Crocosmia 196, (199) Crocuses 306, 669, (669), 671, (671), 1083, 1101, 1112 history 24 propagation 131 varieties 306, (307) Cronartium ribicala 368 Crop rotation of vegetables 970, (970), (971) Croquet lawn 609, (611) Cross-leaved brath 513 Croton 645, (648), (667) Crown gall 365 Crown imperial 955 Grows (1174), 1175 Conclierar 73 Crustorea 1182 Cryptanzhus 646, 664, (675), 676 Cryptogramma (580), 583 Cryptograms 47 Cuckon flower 481 Cucumber leaf sunflower 157 Cucumbers, diseases 349, 365, 376 pests 400 pickles 842 ridge 1019 varieties (1020), 1021 under glass 393, (895) varieties 895, (896) Cultivar, description of 29 Cuphen 153

Cupid's dart 192 Caprensus 511, 557, 360, 562, 567, 963 Currant tematoes 1077 Curtis, William 36 Cursonus 573 Cushion Scale (198), 401 Cut flowers, treatment of 967 wilting of 65 wire neiting for 337, 953 Cuttings, see Propagation Cutworms 381, (382), 388 Cyclamen 118, 285, (285), 316, 907 diseases (363), 364, 363 hardy 316 history 24, (33) pest 401 nowing seeds 907 Cyclamen poppy 573 Cymbidiums 921, 914, (924) reputting 927 varieties 927 Cymura 561, 562, 577 Cynoglossium 153, 172, 196 Cypcess, false, we also Chamaecyparie Lawson's 495, 556 Monterey 511, 557 Summer 160 Cypripedium (925), 928 Cyriamium 586, 387 Cytisus 491, 500, 501, 511, (514), 530, 532, 560, 1087, 1103

D

Daboecia 512, 530 Ductylis (589), 593 Daddy-long-legs 183, 603 Daffodils 267, 310, 1083, 1101, ser also Narcissus forcing 671, 919 pests 408 propagation 131 Dahl, Dr. Andreas 239 Dubliss 239-251, 1101, 1112 anemone-flowered (239), 240 cactus-flowered (238), 240, (250) collarette (239), 240, (249) decorative (238), 240, (248) disbudding 246, (247) diseases 248, 353, 364, 365, 371 double show and fancy 240 dwarf bedding 241, (249) propagation 241, (242), (243), (244) exhibiting 1070, (1071)

Dahlias - continued management 246 miscellaneous classes 241 orchid-flowered 241, (251) pacony-flowered (238), 240 pests 247, 404, 405 planting 245, (245) pompon (238), 240, (250) single-flowered (238), 239 star-flowered 240 varieties 248 Duisies (343), 602, (602), 1076, 1101 double, 122, 1101, 1112 Daisy bush 521 Dalapon 415 Dame's violet 172 Damping down greenhouses \$88, 896 Dumping-off diseases 88, 122, 353, (363), 364 Damsel-fly 1185 Damson jam 834 ielly 838 Wine 829 Danisons 687, see also Plums Danae racemana 1103 Dandelions 411, 415, (419), 599, (602) seed dispersal 70 wine 829 Daphne 500, 512, (512), 530, 578, 1101 Date stone, a plant from 1084 Davallia 587, 677 David, Father 22 Davidia 22, 24 Davis, Peter 24 Day lify (27), 205, 482 Decodon 473 Decorative plants, control of weeds 420 greenhouse 903, (904) pests 401 Deep-freezing procedure 856 peas for 1042 Delayay, Father 22 Delphinium 67, 130, 153, (175), 196 diseases 348, (363), 365, 371 division 130, 197 mulching 196 propagation 130 staking 181, 196 Demirobling 922, (926), 928 Dennstarchia 184 Deodar 509 Derris 247, 381-409 Desert privet 656 Deureia 513, 530, 1101 pruning 489, 491 Devil-in-the-bush 164 Devil's ivy 661 Diaminus 156, 172, 197, 220, 285, (286), 293, 294, 295, (561), 567, 1081, 1109, 1112 curyophyllus 929 mulching 197

Dibber 976, (976) Dicentra 197, (203), 217, 1100 Dicotyledonous, root (53) stem (56) Dicotyledons 47 Dictammus 197, 220 Dieffenbachia 646, (649), 664 Dieldrin 381, 389, 405 Diervilla 529 Digging, double 94, (94), (95) single 93, (93) Digitalis (171), 172, 197, 220, (423) Dill (\$59), 866 water 866 Dimorphatheca 156 Dipladenia rosea 647, 665 Disa 922 Diseases of plants 347-379 lists of 364 non-parasitic 347 correction 361 notifiable 361 of fruit 369 of trees and flowers 371 of vegetables 376 parasitic 347, 348 control 361 potuto certification scheme 361 prevention and control 352. before bolidays 1217 resistant plants 360 Division of plants 129 Dock 415, (417), 421, 983, 1200 Dog rose as stock 137 Dog's tooth violet 317 Dogwood 499, 510, 1101 Dollchothele 623 Donkey's ears 577 Deranicum 200, 220, 1100 Dorset heath 513 Double digging 94, (94), (95) Double flower 24 Douglas, David 21 Douglas fir (496), (502), 521 history 21 Droba 286, 293, 295, 1109 Drucaena 647, (650), 664, 666, (675), 676 Dracaena bromeliad 646 Drugon tree, variegated 647 Dragon-fly 1185, (1185) Drainage 84, 98-100, (99), (100) in pots and boxes 121 Dried blood 103 Drill-making 97, (97), 120, (973) Drosanchemum 623, 628 Drought 977 Dryus 286, (286), 293, 294, 295 Dryopteris (583), 584, 1106 Dumb cane 646 Dutch elm disease 371

624, (625), 1100

Dutch hoe 96
Dutch honeysuckle 546
Dutch light frame 890, 914
Dutchman's breeches 197
Dutchman's pipe 542, see also Aristolochia
Dwarf beans, see Beans, dwarf
Dwarf tormatoes 1060

E

Earth stars 646 Earthworses 1159, 1182 Earwigs 228, 247, 397, (402), 405, (1184), 1185 East Malling Research Station 687, 691, 786 Easter cactus 630 Eccremocarpus 545, 1103 Echeveria (614), 623 propagation 127, 518 Echinocactus 623 Echinocereus 623 Echinoslorus 474 Echinops 200, 217, 220, 1100 Echinopsis 624 Echlum 156 Eckford, Henry 273 Eclipse No-Soil compost 888 Edelweiss 288 Edralanthus 286, 293, 295 Eelgrass 1082 Eclworms 228, (387), 388, 397, (399), 405, (407),

Egg plants 1021, (1022) varieties 1022 Eichhornia 478 Elucaginus 562, 578, 1101 Elder 325, 570, 578 Elderberry and apple jelly 839 Elderberry wine #29 Elderflower and gooseberry jelly 839 Elderflower wine 830 Elecampane 483 Electricity in the garden 913-919 Elephant ear 189, 1104 Elizabethan gardens 12 Elk's horn fern 588 Elm 556, 560, 570 disease, Dutch 37t Elymus (590), 592 Emerald ripple 636 Endives 1022 varieties 1023 Endosperm in seeds 48 English yew (498), (303), 528 Eomecon chlonanthum 573

Epimedium (569), 573, 1104 Entphythum (623), 624 Equiserum arvense (419) Eragrossis 592 Eranthis (316), 317 Erianthur 592 Erica 60, 491, 513, 530, 1113 in greenhouse (905), 907 propagation 130 Erigeron 200, (203), 220 alpine 286, 293, 1109 Erlobotrya Japonica 1103 Erodium 286, 293, 294, 295, 1109 Eryngium 200, (202), 220, 567 propagation 128 Eryslmum 287, 293 Erythronium 317, (517) Escallania 491, 499, 513, 530 Exchacholzia 156, (158), 1076 Euralypius 566, (961), 963 Eucryphia 500, \$13, (515) Eucosymus 513, (514), 530, 531, 567, 578, 1101. 1103, 1106 disenses 371

Euphorbia 201, 217, 220, (562), 567, 571, 615,

Epidendrym (926), 928

for foliage 564
Evening primrose 209, 1076
Evergreen hedges 560
Evergreens, for town gardens 1101
leaves 64
overhead apraying 498
pruning 489, 491, 494
Everlasting Rower 157, 576
Everlasting pea 546
Exhibiting 1062-1073
howers 1068
fruit 1062
vegetables 1064
Exotic brush 642
Extractor fans 917

Eupatorium 200, 220, 481

F

Fagur 582, 565, (568)
Fairchild, Thomas 36
Fairy Beating mean 478
False acacin 524
False express, see Chammeryparis
False gout's beard 481
False oal grass 593

40%

False spiraca 526	Feenla 565
Fan plant 643	Festura 502
Fantasia ivy 652	
Far East, plants from the 21	Ficur (632), 640, 648, 649, 664, 665, 666, (675),
Farmyard manure 105	Field poppy (422) (678
Fut hen (413)	Figs 648, 797
Fatshedera 571, (275), 578, 647, (651), 665, 666,	creeping 650
1101	penta 401
Fatsia 514, (519), 571, 1101	pruning 491, 799, (799)
Faucaria (624), 625, 628	varieties (797), 799, (800)
Fauria in mature gardens 1159	Figword 570
Feather grass 592	Filberta 810
Feather leuf 642	Filipendula 201, (210), 220, 481, 570, 573
Feeding plants 52	Finches (†180), 1(81
Felicia 156	Fines herbes 864
Fences 1140	Finger plant 656
law concerning 1196	Fire thorn 546, 555, 560, 1102
plants for 256, 1103	stratification of seed 119
Fenestraria 625, 628	Fiab 468, 1083
Fennel 365, 860, (860), 867	Fitzonia argyroneura 651, 665, 676
Fermentation, in Jam 813	Flageolet beans 990
in wine 826 Ferns 581-588	Flaming dragon tree 647
greenhouse 585	Flaming sword 662
cultivation 585	Flamingo flower 642
	Flax 161, 208, 288
recommended plants 586 hardy 581	Flea beetles 169, (387), 388, 1004, 1012, 1049
cultivation 582	Fleabane 200
recommended plants 583	Flies (1184), (1185), 1188, (1188), (1189)
in children's gardens 1081	Floating plants 478
in town gardens 1106	Florida ribbon fern 388
Ferocacius 625	Floss flower 148
Fertilizers and manures 101-115	Flower arrangement 942-967
Fertilizers, application and uses of 101, 103, 104,	Flower beds, island sites 177, (187), (190), (193)
105, 106, 109	Flower burder, effect from June-Sept. (178)
as top dressing 110	improving existing one 178
compound 107	Flowering almond 523
analysis of 108	Flowering currant 489, 524, (524) Flowering fern 384
John Innes base 106	Flowering hedges 560
liquid feeds 108	Flowering peach 323
National Growmore 108	Flowering rush 473
fish 95, 103, 104	Flowering shrubs and evergreens in town
foliar feeding 109	gardens 1101
general hints on using 109	Flowers, construction 67, (71)
inorganic 101, 110	contrusts in raised beds (1099)
nitrogenous 102	crystallized 857
phosphatic 102	cahibiting 1068
leaf mould 107	families of 67
organic 103	fertilization 67
	function of 67
organic manares, bulky 105 composting 106	inflorescences 66, (68)
	language of 340
composting farmyard manure 105 hop manures 106	natural order 67
peat 106	pericarp 70, (73), (74)
poultry 106	receptacles 67
sawdust 107	Fluorescent tubes 919
seawood 107	Forniculum vulgare 267
shoddy 107	Foliage 561-579
storing 110	Federa footing 100
	Foliar feeding 109

Foot rot disease 364 Forget-me-not 475, 1101, 1107, 1112 seed sowing 122 Forking 95 Formaldehyde 1015 Formalin 356, 357, 368, 378, 902 Forzythia 22, 514, (550), 552, 1101, 1103, 1107 pruning 489, 491, 499 Fortune, Robert 21 Fothergill, Dr. 20 Foxgloves 172, 197, (423), 952 Found grass 393 Fragrant hedges 560 Frames and cloches 889 cold 122, 124 disinfection 356 Dutch light 890, 914 English light 914 types 889 Frameworking 141 Frazer, John 20 Freezia, disenses 371 pest 410 French beams, are Beans, dwarf French lavender 518 French Illac 192 French manigold 168 Fringed pink 156 Fritillaria 317, 482, (482), 955 Fritillary 1101 Frogbit 479 Frogs 1166, (1166) Frost pockets 16, 682 Fructose in leaves 62 Freit 70, 681-822 buying trees and bushes 681. deficiency symptoms 683 diseases (358), (359), 369 exhibiting 1062, (1063), (1064) frost damage (350), 682 protection 683 function 70 general care 683 harvesting 688 Min. of Agriculture Certification Scheme 681 per learns (73) perts of (390), 391, (391), (394), (398) planning gardens for (686), (688) planting, control of weeds 415, 682 preserving 832 propagation 136, 685 pruning 491 toff, protection against birds 682, (682), 709 stock 136 виррога 682 syrups 854 unusual 797

wine-making 823

Fuchila 491, 499, 501, 514, 552, (553), 560, 577,

1101, 1107, 1112, 1115

Fuchsia — continued history 19, (19) Fumaria afficinalis (413) Fumigation 333, 888 Fungi 66 in soil 87 Fungicides, amokes 336 dust 973 systemic 360 Fungus, soil-borne 973 Funkia 206, 367 Furcraea selloa marginata 651, 665 Furse, Paul 24 Furse 528

G

Gages, see Plums Gaillardia 157, 201, 220 propagation 128 Galanihus 317, 963 Galax aphylla 1106 Galega 201, 220 Galiania 201, 318, 1101 Ganwick frame \$89 Garden balsam 160 Garden chafer 404 Garden, landscape, for children (1074), 1075 Gaeden pickle 841 Gardener's garters 593 Gardenia 945 diseases of 371 Gardening diary 425, 1087 Gardening, history of 29-45 indoor 667-669 roday 37 Gardens, during holidays 1217 history 13 Garlie 29, 867, 1091 Garrya 21, 545, 1103 Gasterlo 625, (625) Gates for the garden (1143), 1149, (1150) Gaultheria 500, \$15, 530, 531 Gay feather 207 Gazanta 1112 Generic names 26, 1218 Genetics 26 Genizta 491, 513, 531, (531) Gentian see Gentiama Gentiana 201, (202), 287, (287), 293, 294, 295 Genus, definition 28 Geranium (116), 201, (203), 204, 287, 293, 294, 364, 366, 573, 579, (880), 908, 1087, 1100, 1107, 1112

Gerard, John 17, 30	Golden moss 571
Germination 48, 119, 122	Golden prives 555, 1100
encouragement of 974	Golden rod 215
Geum 204, 287	propagation 129
Glant reed 593	Golden-leaved plants 562, 567
Giant scabious 153	Goldfish 468
Giant summer hyacinth 201	Golf, lawns for practice 612
Giant yellow scabious 192	Gooseberries 491, 687, 742, (744), (745), (746)
Giliatricolor 266	diseases (358), 365, 369
Ginkgo 315, 530, 531, 271	jam 834
b(loba (497), (503)	pests 384, (390), (391), 392, 393, 396, 397
Glucier Ivy 652	types of bush 743
Gladioti 332-339	varieties (742), 747
bulblets 335	weed control 415
butterfly type 133	wine 830
varieties (332), 338	Gooseberry and elderflower jelly 839
colvillei 334	Goosefoot 599
varieties 338, (339)	Gopher wood 1090 Gorse 528
corms and cormlets 334, 335, (335) diseases 336, 353, (363), 365, 372	dispersal of seed 70
early flowering 334, 338	Gourda 1077, (1077)
exhibiting 334, 336, 1071, (1072)	Grafting 136, 139, (139-143)
face-ups 334	Granite chippings 1124
large flowered 333	Grape byacinth 319, 1083, 1101
varieties (332), 337	Grape ivy 659
miniature 333	Grape jelly 838
varieties 338, (339)	Grape wine 830
history 333	Grapefruit tree 1084
pests 336, (363), (403), 405, 408, 410	Grapes, outdoor 815, see also Vines
primulinus hybrids 333	under glass 895
varieties 338, (338)	diseases (351), 364, 365
Glass, in the garden 881-912	eshibiting 1062, (1063)
cloches 889	varieties 898, (900)
greenhouses 881	Graptopetalum 625
In garden construction 1143	Grans, killers 413
Glaucous-leaved plants 566	propagation for lawns 599
Glecoms hederacea 578	Grasses, ornamental 589-593
Gleditschia (493), (502), 515, 1104	pollination 69
Globe Bower 216, 484	suggested plants 590
Globe thistle 200	variegated 393
Globalaria 288, 293, 294	Grasshoppers 1089, 1184, (1184)
Glottiphyllum 625, 628	Green gage (785), see also Plums jam 834
Gloxinias 907, 919, 944 diseases 372	
propagation 127	Green gold pepper 656 Green manuring 113
varieties 907	Green ripple lvy 651, 634
Glucose in leaf 62	Greenfly 228, 380, 385, 468, 641, 935, 1004, 1185
Glyceria 474, 579, (589), 593	Greenhouses B&I
Goat's beard 480	aluminium 884
Gnat's rue 201	care before holidays 1217
Goderia (151), 157	condensation in 885, 886
diseases 353, 364, 372	disinfecting 353
dwarf 266	Dutch light 881, 882, (883)
Golden acacia 570	furnigating 35), 888, 1217
Golden elder 499, 525, 570	best insulation \$85
Golden feather 570	heating 884, 915
Golden heart by 653	hygiene 888
Golden heather 567	law, relating to 1197
Golden marjorani 579	lean-to 881, (883)
Golden mint 563, 579	pests 397

Greenhouses - continued plants 893 propagating equipment 887 ring culture 902 shading \$86, (886), 923 siting 882 soil sterilization 352, 400 soil-warmed borders 914 span-roofed 881 supplementary lighting 882 temperature 884, 917 three-quarter span 881, (883) ventilating 885, 917 wooden 884 Grevillea 122 Grey bulb not disease 357 Grey mould fungus 364 Ground cover 563 for town gardens 1104, 1106 Groundsel (412), 599, 1170 Growth-regulating substances 124, 487 Grubs, chafer 381, (382) Guano 104 Guelder rose 529 Gulf stream, effect of 979 Gulla (1170), 1172 Gumnera 482, 573 Gymnocalycium (624), 626 Gymnosperms 47, (48) Gypsophila (151), 157, 204 alpine 288, 293, 294

H

Hair grass 590 Halesia 315 Hamamella 491, 500, 515, (516), 531 Hampton Cours Gardens 30 Handkerchief tree 22 Hanging baskets 144, 910, 1114, (1114) plants for 587, 588, 1115 Hardening off 147 Hardy perennials 174-220, 1071, 1100 Hare's foot fera 587 Hare's tail grass 592 Harriot, Thomas 18 Hartford fern 587 Hart's tongue fern 584, 1106 Harvestmen 1182, (1183) Harrield House gardens 18, 32 Hawarthia 626, (626) leaf-cuttings of 618 Hawthorn 511, 552, 560

Hawthorn - continued pents 405, 409 powdery mildew on 365 pruning 488 need 119 Hay-scented fern 584 Hazel 118, 551, 560 nuts 70, 1090, see also Cob-nuts pollination 69 Heading back 140, (483) Heath 491, 513 Heather 16, 20, 66 Heating, electric 884, 913 oil 884 Hobe 516, 530, (561), 564, 566, 1101, 1113 Hedeva 545, 966, 1103, 1106 as foliage plant 570, 572, 577, 579 adventitious roots 53 house plants 651, 652, (654), 664, 665, 666, (667) Hedgehog holly 578 Hedgebogs 1160, (1160) Hedges 548-560 us backdrop 1097 coniferous 556, 360 evergreen 560 flowering 560 Fragrant 560 Fruit 681 law concerning (200) maintenance 489, 549, (549), 918 miniature 551 mixed 560 ownership of 1196 planting 548 plants for \$33, 550 seaside 551, 556, 560 shelter 1148 town garden 1097 Hegling-In plants 258, 493 Helenium 204, 220 De513 405 propagation (117), 129 Helianthemum 577, 1109 alpine 288, 293 cutting back 281 Helianthus 157, 205, 1079 Helichrysum 157, 280, 576 Heliopsis 205, 220 Heliotrope 157, 1101, 1107, 1112, 1113 Helintroplum 157 Helipserson 157 Hellebore, in flower arrangement 947, 963 leaf spot (363) Helleborns 573 Hemprocallis (27), 285, (211), 217, 220, 482, 1100 Hemlock spruce 559, 560 Hemp agrimony 481 Henry, Augustine 22 Heracleum mansegazzianum 573

Herb garden, border 550 chess-board (839) paved 861 planning 860 penition of 859 window-box 1113 Herb of grace 567 Herbaceous sniraeas 201 Herbariama, origin of 29 Herbs 858-871 history of 29 plants to grow 858 use of 863 Hesperis 172 Hewhera 205, (210), 217, 1100 Hemberella 206, 217, 1100 Hibiscus 491, 500, 516, 530 Hierarium 280, 577 Hill, Thomas 30 Himalayan honeysuckle 519 Hippophae 300, 516, (517) History of gardening 14-45 Houry plantain (419) Hoe, types of 96, 97, (97) electric 918 Holeur (591), 593 Holly 119, 488, 489, 1100, see also tlex lenf miner (403), 409 seed 119 Holly fern 587 Hollyhock 185 pests 405 propagation 128 rust disease 185, (366) Holm oak (497), (503), 324, 555 Honeuty 172, 579 Honey Jungus J68 Honey Idenst (493), (502), 515 Honeysuckle (343), 546, ser also Lonicera stems 55 Hoof and horn meal 103, 112 Hop manures 106, 465, 582, 1097 Horehound 579 Hormones 487 Hornbeam 551, 560 pollination of 69 Hornett 1089 Horse chestnut 947 growing from seed 1080. history IT, IR propagation 132 Horsetail (419) Horticultural Society of London 21 Hosta 206, 482, 1100, 1106 as foliage plunts 364, 367, 570, 573, 579 Hot-beds, electric 914 Hottonia 480 Hound's tongue 153, 172 House plants 633-666 choosing 634

House plants - continued classification 664 common names of 664 conditions for 634, 965 feeding 637 for cool room (678) for warm room (667) pests 641 popular plants 642 pruning and training 639 repotting (638), 639 Houseleek 291, 615, 1081 Houstaynia 474 Huckleberry 804 Historia elegani 961 Humus 76, 85, 105, 1097 Hypeinth 307, (308), 318, (668), (669), 1083, 1085, classification 664 forcing 671, 919 pests 40% varieties 308 Hyacinth-flowered condytuft 160 Hyurinthus 318 Hybrids 24, 25, 29, 75 Hydrangra 516, 530, 531, 947, 1101, 1103, 1107 blue 517 climbing 543, 572 discuses 372 for hedging 553, (553), 560 lace-cap varieties 517 pests 404 pruning 491, 499, 500, 501 Hydrocharis 479 Hypericum 130, 516, 517, 530, 531, 577, 1101, 1106, 1109 ulpine 288, 293, 294 pruning 491, 499, 501 Hyssop (859), 867, (868) ten 867 Hyssopus officianlis 867

T

Iberis (158), 160, 1078, 1100, 1106, 1109 alpine 288, 293 Ice plant, variegated 567, 661 Iceland poppy 173 Ichneumon flus 1188 Ilex 531, 553, 560, 578, 1101 Imprelle 157 Impatieus 147, 160, 1078 Importing plants 361, 1198 Incavilles (202), 206

Incense plant 961 Indian bean tree (500), (503), 508 Indian com 593 Indian fig 628 Indian pink 136 Indigo 517 Indivolves 499, 517 Indoor gardening 632, 667-679, 1080, (1082), (1083)Inflorescences, examples of (68) Insects 1182 and pesta, law concerning 1197 beneficial 380 specialized conditions for 1159. Inter-cropping vegetables 972 Inula 206, 220, 483 Ionopsidium negule 1080 Inhelon 320 Ipomoea 160, 1075, 1113 Irises 206, (210), 308, (466), 474, 483, 567, 1100 alpine 288, 293, 295 bulbs (309) diseases of 206, 372 Dutch 308, 309 English 308, 309 German 130, (130), (210) history 18, 24, 26 lime for 206 pests 405, 408, 410 propagation 130, (130), 131 thizomes of 55 Spanish 308, 309 species and varieties 309, (309) Irish marbled lvy 652 Iron Cross begonia 643 Irrigation, electric pumps for 918 for vegetables 977 in the Bible 1091 Inatia sinctorta 29 laland flower beds 177, (186), (190) lvy, see also Hedern scale on 401 Ivy peperomia 656 Tvy tree 647 Ivy-leafed speedwell (412)

)

Leislirian 318

Jackdaw (1174), 1175 Jacob's ladder 212 Jam-making 832 Japan, plants from 16

Japanese pink 156 Japanese wineberries, see Wineberries Japonica 543, 961, 1101, see also Charnomeles Jasmine, see Jasminum history 17, 22 Janminum 546, 578, 1103, 1113 priming 491, 499, 500 Jelly-making 837 equipment for 833 Jerusalem sage 571, 1101 Jew's mallow 518 Jewel of the veldt 168 Job's tears 591 John Innes, base fertilizer \$87 Institution 692 potting compost 887 seed compost 887 Jonquil 312 Joseph's cont 148, 645 Judes tree (494), (502), 509 Jumping tack 1078 Juncius (422), 474 Juniper, see also Juniperar diseases of 372 Juniperus (501), (503), 518, 557, (559), 560, (563), 570, 571, [107 Junsieum 474

Japanese maple 504, 505, 564, 1107, (1108)

K

Kaempfer 18 Kalanchoe 626 Kale 1023 varieties 1024 Kalmia 491, 301, 518, (519) Kangaroo vine 645 Kentranthus, see Centranthus Kerria 130, 499, 518, 530, 531, 578, 1101, 1103 Kew Gardens 20, 22, 34 Kidney beans, see Beans, dwarf King's acre berry 807 Kinggup 473 Kingdon-Ward, Frank 24 Kingfisher daisy 156 Kirengeshama palmara 573 Kleinin 627 Knapweed 192 Knight, Thomas Andrew 26 Kniphofia 207, 217 Knol kohi, see Kohi rabi Knotgrass (422) Kochia 160, 1078, 1112 Kohl rabi 1025

Labelling (120) Laburnum (501), (503), 518, 530, 1104 diseases of 369, 372 Lace-wing flies 1185, (1185) Lad's love 17, 505, 580, (350), 571 Lody fern 582, 583, 1106 Ludy's amock 481, 572 Lady-in-the-buth 197 Ladybirds 1187, (1187) Lacila 928 Lagaros(phon (478), 490 Logurus 592 Lamarckia 592 Lamb's lettuce 1019 Lamb's tails 551 Lamb's tongue 577 Lamban 579, 1106 Lampranthus 627, 628 Land-development, law concerning 1197 Landscape garden for children 1075 Language of flowers 340-346 Larch, diseases 372 Larkspur 153 pests 410 Late Dutch honeysuckle 546 Lathyrus (23), 207, 217, 220, 546 Latin names, and their meanings 1218-1223 Laurel 532, 554, 555, 560, 947, 1102 newly planted 498 pruning 488 Laurier 518, 1101, 1107 Laurustinus (526), 529 Lavandula 500, 530, (554), see also Lavender Lavatera 160, 207, 220, 1079 Lavender 491, 518, 554, 560, (859), 867, 1100, 1102 bags 867, 1086 water 367 Lavender cutton 525 Law for gardeners 1194-1200 Lawn tennis court (610) Lawns 594-608, 609-613, 1096 fertilizers for 411, 594, 601, 605 fungus diseases 601, 603 levelling 594, 600, (600) maintenance 599 moss 414, 603, 605 mowers 605, 918 mowing 599, 600, 604, 608, 1217 mowings, as mulch 786, 992, 1032 in compost 112 planning and preparation 594

Lawns - continued resovation (604), 605 rolling, when established 600 before sowing 595 seed mixtures 595, 1096 soil 594 pests in 600 sowing 595, (597) turfing 597, (598), (600), 609 vegetative propagation 599 weed control 411, 414, 595, 599, 601, 602, (602). Lawson's cypress (495), (502), 509 Layering 132, (132), 133, (133) nir 134, (135) Leaf, arrangement 57, (61) mould 107 as mulch 97 shapes (58), 60, (502), (503) Leaf beetles 1186 Leaf black spot 373 Leaf blotch (355), 371 Leaf spot disease 352, (358), (359), (363), (366), (367), (370), 371, 372, 374, (374) Leaf-hoppers 349; 397, (398), 406, 408 Leaf-miners 397, (402), (403), 408, 476 Leaf-rolling insects 504 Leaf-weevils 404 Leafy gali (362), 365, 371 Leatherjackets 380, (382), 383, 603, 1189 Leaves, function 57, 109 Lee, James 19 Leeks 1025, (1027) diseases of 176 exhibiting 1026, 1066, (1066) general care 1027 history 29, 1091 pests 388 seed saving 75 varieties (968), (1026), 1028 Lemaireocereus 627 Lemon, plant grown from a pip (677), 1084 Lemon-scented verbena 519 Leontopodium 288, (288) Leopard's bane 200 Leptosyne 160 Lettuces 1028, (1029), 1079 con (1030), 1031 varieties 1031 diseases 349, 365, (375), 376 pests 384, 385, 392 seed saving 70 sowing 120, 1028, 1031 broadcast 120 in cold frame 122 summer cabbage 1028 varieties 1029 under cloches (891), 892 varieties for children's garden 1079 winter cabbage 1001

recreational 609

watering 612

earthworms in 609

maintenance of 609

Lettuces, winter cabbage - continued varieties (1030), 1031 Leucojum 319 Levelling in garden construction 594, (600), 1116, (1119) Lewisia 288, 293, 294 Ley, temporary 114 Leycesteria formasa 499, 519, 1102 Listria 207 Lighting, artificial 918 day length manipulation 919 for bulb forcing 919 replacement 919 supplementary 918 Lights, installation of garden 1097 Ligularia 207, 220, 566 Ligistrian 554, 560, 562, 570, 1102 Lilacs 527, 556, 1102 diseases (366), 372 pests (403), 409, 410 pruning 131, 491, 501 Lilles 321-331 bourytis 323, 372 bulbs 322, (322), (323) diseases 325, 372 history 24 hybeid 330 in pots 323 in town gardens 1101, 1107 pests 324, 325, 410 seed sowing 122. species and varieties (321), (325), 326, (326), (327), (328), (329), (331) stem-rooting 322, 323 with roses 267 Lily of Japan, golden-rayed 126 Lily-of-the-valley 28, 57, 1104 Lime 92, 1096 Lime sulphur 369, 371, 390, 393 Limnarthes dauglasti 21 Limonium 207, 220 Linaria 161, 1109 alpina 288, 293, 295 vulgaris (418) Ling 307 Linnaeus 28 Linné, Carl 28 Linum (159), 161, 208, 220, 288, 293, 1109 Lippin 519 Liquid feeds 108 application 109 Lithope (626), 627, 628 Lithospermum 289, 293, 294 Little diamond ivy 652 Little fantasy 656 Livingstone dalay 164 Lizard's tail 476 Lizards (1168), 1169 Lobb, Thomas 22 Lobb, William 21

Lobelia 118, 161, 483, 566, 1112 trailing 1115 Lobivia 627 Locust tree (494), 302, 524 Loganberries 749 jam 835 pei/a 396 propagation 132, 133, 687, (750), 751, (751) training (750), 751 varieties (748), 751 London plane 25 London pride [113 Lanicera (539), 546, 549, 555, 570, 1076, 1100, 1103, 1113 Loofah 1077 Loosestrife 206, 483 Lophophora 627 Loquat 1103 Loverrass 592 Love-in-a-mist 164, 1078 Love-lies-bleeding 148 Lowberries 807, (807) Luffer 1077 Lunaria (171), 172, 579 Lungwori 213 Lupins (175), 208, 1190 annual 144 as green manure 113 division 130 pests 410 Lupians 500, 519 Lutzii jvy 652 Lychnis 161, 208, (575), 577 flos-cucul i (422) Lygadium 587 Lyme grass 592 Lynichttum 483 Lysimackia 208, 220, 483, 570, 1112 Lithram 483

M

Macariney rose 546
MacIraya 208, 220, 573, 1100
Madonna lily 326, (331), 1093
Madwort 148
Mageolia 60, (344), 519, (520), 530, 571, 861,
1103, 1104
history 15, 16, 20
pests 401
pruning 488, 500
Mahonia 21, 520, 536, 531, (561), 571, 963, 1102,
1106
Maidenhair fern 583, 586, see also Adianum

Maldenhair tree (497), (503), 515, 571 Medlars - continued Mulcomia maritima 161, 1075, 1076 jelly 839 Male fern 382, 584, 1106 varieties 803, (804) Mailing-Merton root stocks 692 Melandrium 208 Mallow 160, 207 Melissa officinalis 865 Malope 161 Melons 898, 914 Malus 520, 565, 1107 varieties 899 Mammals in the garden 1159 Mendel, Johann 26 Mammillaria 627, (628) Mentha 289, 294, 563, 579, 673, 868, 869 Mandrake 1091, (1091) Monyanthes 474 Mangold wine \$30 Menzies, Archibald 21 Manna grass 474, 593, see also Glyceria Mertensia 208, 217, 1100 Manure 85, 101-110 Mesembeyanthemum 164, 625, 627, 628, 1076, farmyard 105 1112 fish 104 Metham-sodium 400 hop 106, 465, 1097 Mexican breadfruit 653 hot-bed 913 Mexican orange blossom 510, 571 liquid 108 Mexican poppy 149 poultry 106, 114, 113, 1097 Mezereon 512, (512) Mibora (589), 592 stable 105 Manuring, green 113 Mice 1163, (1163) double green 114 Michaelmas daisies 187, 188, 947, 1087, 1100 Mup garden 1075 diseases 348, 365 Maple 372, 489, see also Acer division of 129, 181 Maranta 653, 665, (667), (675), 676 powdery mildew on 365, (366) Marguerite 1107, 1112, 1115 Micro-climates 16, 634 carnations 929 Microlepia 587 Marigolds 118 Midget beds and borders 177 African 17, 167 Mignonette 165, 1078, 1112 diseases 348 Mildew 188, 348, 365, 975 French 167, 1080 Milifoll 183 pests 383 Milium effusion aureum 570 pot 149 Milkweed 481 Marjoram 860, (860), 868, (868), 1113 Millipedes (382), (383), 1183, (1183) Mari 84 Mirogra pudica 1078 Marmalades 835 Miniaha (159), 164, 481 Marrows 1032, (1033) alpine 289, 294 chutney 845 Mineral deficiencies 91, 109, 683 diseases 352, (375), 376 Miniature gardens 672, (672) exhibiting 1066 for children 1080 pickle 842 Miniature sunflower 157 varieties 1033 Mint 379, 660, (860), 868, (869), 1113 Marrublum variegasum 579 rust 368, (375) Marsh marigold 66, 473 variegated 563 Marsh samphire 615 Miscantha 579, 593 Martina (1158), 1139, 1173, (1175) Mock orange 522, (522), 570, 1102 Masson, Francis 20 Moles 1160, (1160) Masterwort 189, 481 Molinia 593 Matricaria 161, 224 Mollurca 1182, (1183) Matthiola 161, (171), 172, 1080 Monarda 130, 209, 484 Muxillaria piera 829 dividing 181 May 511, see also Hawthorn Monkey Bower 164 Maywood 399 Monkey puzzle 21, 505 Meadow suffron 305 Monkshood 184, 480 Meadow-rue 215 Monstern deliciosa borsigiana 653, (657), 662, Meadowsweet 481 666, 967 Mecompsis, history 24 Monthretia 319, 566 diseases 365, 372 Monterey cypress 511, 557 Mediterranean, plants from 24 Monuron 414, 421, 424 Mediars 802 Moon dalsy 193

Moonwort 172 Naming of plants -- continued Moraines, constructing 302 in Latin 1218 Morisla 283, 289, 293, 295, 1109 Narcisms 267, 310, (311), 671, 1093, 1101, 1107, Morning glory 160, 1075, 1113 pests 410 angel's tears 955, 1081 Mores 1104 bulb (311) Mosaic 349, (359), 369, (370), (375), 376 cyclamineus (311), 312, 1081 Mesquiso 1189, (1189) diseases (366) Moss, destroying in lawns 414, 603, 605 double 112 gardens 679 history 24 sohagnum 134, 136, (137), 640 formullly 312 Mosa rose 958, (966) large-cupped 310 crested 525 miscellaneous 312 Moth mullein 173 planting (310) Mother-in-law's tongue 659 poer/cur (311), 312 Moths (382), 384, 385, (386), (387), 388, 393, small-cupped (311), 312 (394), 396, 397, (398), (402), 405, (406), (407), tagetta (311); 312 1189, 1192, (1192), (1193) trimadrus 312, 1081. Mount Etna broom 515 albur 955 Mountain ash (495), (502), 526, 958 trumpet (310), (311) pests 409 Narcissus fly 310 Mountain avens 286 Nassarriums 28, 168, (859), 868, 1078, 1107, 1113, Mouse-tail plant 1078 Moutan pasony 521 pests 404 Mowers, see Lawns National Chrysanthemum Society 1070 Mulberries 801, (801) National Dahlin Society 1070 black, history 17 National Growmore Fertilizer 108, 548 wine 330 Nature calendar 1201-1216 Mulching 91, 97, 498, 794 Neunthe bella 653, 665 Mullein 173, 216 Nectarines 753, 1107 Munstead dwarf 518 varieties 758 Muriate of potash 102 Nemesia (158), 164, 1101, 1112 Muscari (318), 319, (668), 1107 Nemophila 164, 266 for forcing 671 history 21 Muscat syrup 855 Neoregelia carolinae tricolor 653, 664 Musk 289, 483 Nepeta hederacea variegata 578 history 21 Nephrolepis exultara (586), 588 Muak rose 546, 556 Northe 319 Mussell scale (395), 397, 409 Nettles 176, 983 Mustard 1092 control 415, 421 Mustard and cress 114, 1034, 1076, 1079, 1085 New Zealand dalsy 1102 Mutanta 24 New Zealand flax 565, 961 Myosoria (170), 172, 475, 1112 New Zealand spinach 1054 Myriapoda 1183 Newts 1167, (1167) Myriophyllum 475, 480, 1082 Nicotiana 164, (166), 1107 Myrrh tree 1091 Nielson's ivy 651. Myrtle 520 Nigella 164, (166), 1078 Myrnu 500, 520 Night-scented stock 161 Nitrogen 85, 86, 87, 88, 101, 113 cycle (86) "No digging" theory 87 Nosh's ark juniper 518

TA

Naked ladies 316 Namaqualand daisy 168 Naming of plants 26 Non-flowering plants 47

Norway maple 565 Norway spruce 558 Notocactur 628, (629)

Nuphur 463, 475

North American maidenhair 583, 586

Nurserymen, establishment of 30

in horticultural progress 35

Nutrient deficiencies, temporary 264 Nuts 809 in the Bible 1090 Nymphasu (456), (464), (466), (469-471), 470 Nymphasu 475

0

Oak 523, 555, 1080, 1090 diseases 365, 372 Oat 391 Obedient plant 130, 212 Ocimium barilicum 865 Odontoglossum (920), (921), 922, 928 Oenothera 209, (211), 217, 220, 1076, 1100 alpine 289, 293 Old man 505, 550, (550) Old man cactus 621 Old pheasant's eve 312 Oleander peuts (399), 401 Olearia 521, 530, 576, 1100, 1102 Omphalodes 289, 294 Oncidhum 928 Onion fly 1034, 1036 Onion grass 593 Onions 29, 75, 976, 1034, (1036-1038), 1091 discuses 365, (375), 376 exhibiting (1066), 1067 general care 1036 pests 385, (387), 388, 389, 408 pickled 843, 1038 varieties (1035), 1038 weed control 420, 424 Oneclea 584 Onepierdon arabicum 564, 577 Opium poppy 165 Oplismenus histellus 593 Opumia 628, (628), (629). Orach 366 Orange fily 326 Orange, plant grown from a pip (677) tree 1084 wine 830 Orchard, plan of (684) Orchids 920-928, (920), (921), (924), (923), (926) himory 20, 22 pests 401 selection 922 suggested plants 927 Oregon grape 1106 Oreocereus 629 Organic maner 85, 86, 87 Organo-mercurial dust 372, 973

Orlgamen 562, 570, 868
Ornational grasses 589-593
Ornithogalina 320, 947
Orontum 473
Osmanihus 1103
Osmanula 584
Osmano 1844
Othomopsis chelrifolia 563, 567
Ox eye 481
Oxalis 24, 280, 289, (289), 293, 294, 295
Oxygenators 467, 469

P

Pachyphytum 629, (629) Pachysandra 573, 1106 Padder tennis court (611) Pacciny, see Pacovda Paronia 209, (211), 500, 521, (523), 1100 division 131 history 17, 21, 22, 28 stem wilt (367) Painted tongue 167 Pampas grass 592 Panicum 592 Pansies 1080, 1101, 1112 cuttings 283 exhibiting 1071, (1072) sowing seed 122, 1080 Panther lily 329 Paparer, annual 165 biennial 172 perennial 209 Parkinson, John 18, 20, 34 Parlour palm 653 Parodia 629 Parsley (860), 868, 1113 pests 389 seed sowing 120 Paraley fern 583 Parsley ivy 651 Parsley piert 602, (602) Paranips 1039 diseases 365, (378) exhibiting 1065 general care 1039 pents 385, 388, 408 seeds 119 seed-taying 70 varieties (1039), 1040 wine 830 Partridge-breasted aloc 620 Passiffore (545), 546, 1103

Passion flower 546	Pectin in fruit 833
Pasque flower 213, 1076	Pelargonium 629, 908, 967, 1107, 1112, 1115,
Paths 1121, (1122), (1124-1128)	1217
alpines for 295	cuttings (116)
in rock gardens 300	diseases 364, 365
in town gardens 1096	ivy-leaved 908, 910
weedkillers for 414, 421	show 908
Paties and terraces 1135, (1136-1139)	Pellaca 588
screens for 1142	Peltandra 475
Paul's double scarlet thorn 511, (512)	Pencil cedar 557
Peaches 753	
diseases (354), 369	Pennisetum 592
	Реплутоуні 869
feeding 754	Pensteman 209, 217, 289, 293, 294, 295, 1100,
in children's gardens 1080	1109
in tubs 1107	Peperomia 656, (659), 664, 665, 666, (667), (675),
pesta 397, 401, 404	676
preserved 836	Pepper 656
slices in jelly 838	Poppermint (859), 869
spiced 844	Perennial phlox (174), 212
suckers 132	Perennial weeds, control of 415
trees 493, 754	Perennials, hardy 174-220
bush 754, (757)	beds and borders (76, 177, (178), (182), (186),
fan-trained 754, (755), (756)	(190), (193)
planting 754, (755)	planning 179
pruning 489, 491, 754, (755), 757	exhibiting 1069, 1071
thinning 757	for chalky soils 220
varieties (752), 758, (758), (759)	for exposed sites 217
Pearl grass 591, (591)	for beavy soil 220
Pearlwort, control of 411, 602, (602)	for town gurdens 217
Pears 760	spread of 180, 182
bud development (765)	staking 181
chutney 845	suggested plants 182
compatible varieties 760	under cloches 892
diseases 347, (354), 364, 369	weed-control IBI
exhibiting 1062, (1063)	Pergolas 1097, 1144, (1146), (1147)
family tree 764	with roses 256, (262), (1116)
history 20	Pericarps 70, (73), (74)
in tubs 1107	Periwinkle 130, (344), 1106
marusalade \$36	Pernetrya 521, (521), 530, 531
pests (395), 396	Pershore stock 773
seeds 70	Pesticides 380, 888
self-sterile varieties 760, 764	Pesta 380-410, 1197
stock for budding 136, 687	control with electricity 918
tree types 761, (762), (764)	fruit garden 391, 709
varieties (760), 765, (766-771)	general garden 381
Pens 1040	greenhouse 397, 888
diseases 365, 376, (378), 1041	in the Rible 1089
dispersal of seed 70	of decorative plants 247, 266, 277, 401
exhibiting 1067, (1067)	of house plants 641
general care 1041	sap-sucking 504
history 29	vegetable garden 385
posts 384, 385, (387), 388	Petrosell num crispum 868
seed saving 70	Pennias (162), 165, 947, 1107, 1112, 1115
towing 119, 1040, (1041)	diseases 353, 364
supporting (1042)	
tendrils 55	propagation [1]
varieties 1042	Peucedanum graveolens 856
	Phacelia 165, 266
weed control 420, 424 Peat 106	Phalaris 579, 593
Palalata at any 249	Phenant's eye 146
Pebble plant 627	Phenomenal berry 807

Philadelphus 491, 499, 501, 522, (522), 530, 570. Plants - continued 578, 958, 1102 under glass 893 Philadembron 656, (660), 664, 665, 666, (678), 967 Plantsmen in history 30 Philanutz 571 Plastics, in the garden 892 Phlox (31), (163), 165, (174), 212, 379, 1100, 1112 Platycerium (587), 588, 658, 665 alpine 282, 289, 293, 294 Platycodon 289, 293 division 129 Pleiospilos 628, 630 history (31) Plum and apple butter 840 leaf spot (367) Plums, damsons and gages 773 mulching 212 cheese 840 penta 404, 405, 408 chotney 845 propagation 127 diseases (355) 369 exhibiting 1062 Phormium senax 563, 565, 961, 963 Phosphatic fertilizers 102 flowering 523 Photosynthesis 57, 62, 63, 64 iam 835 Phyllicis (580), 584, 1106 pests 392, 393, (395), 396, 397 Physalir 130 pickie 844 alkekengt, history 17 propagation 687 Physosregia 130, 212, 217, (218), 220, 1100 pruning 489, 491, (775), (776), 777 Phylophthora Infestans 360 support for branches (778), 779 Picculilli 842 training (776) Picea (495), (503), 522, 557, (559), 560, 566 trees, types of 773, (774) Pickerel weed 475 bush 773 Pickles 840 fan-trained 773, (774), (777) Pickling walouts \$13, 843 half-standard 773 Pigeons 1172 pyramid 778 Piggy-tail flower 642 standard 773 Pilea 658, 664, 676, (678) varieties (772), 782, (780-782), (784), (785) Pinypernel 148, 480 weed control 414, 415 Pimpinella anisum 865 wine 830 Pincushion flower 167 Poa nemoralis 1096 Pine 522 annua (412) Pincapple, candied 837 Pococke, Rev. Edward 18 growing from a top 677, 1085 Polemonfum 212, 217, 220, 1100 Pink Queen of Rio 647 Pollen, refrigeration of 25 Pinks, see also Dianthus Pollination 67, 71, 685, 697, 719, 764, 777 for edging 267 by bees 69 pipings 128 by beetles 69 Pinus 522 by butterflies 69 Pipings for propagation 128 by fties 69, 727 Pips, plants from 677, (677), 1084 by moths 69 Pittalen, Dr. 20 Polunin, Oleg 24 Fittosporum 571 Polyanthus 1101, 1107, 1112 Plane tree, hintory 25 leaf spot (367) Plumrago (419), 566 Polygonatum 1106 Plantain 599, (602) Polygonum 212, 217, 220, 546, 578, 1100, 1103 heary (4|9) alpine 289, 293, 294 Plantain Illy 206, 482, 1106 aviculare (422) Plants 47-75 Polypodium 382, 588 breeding 26 Polyatichum 584 classes of 47 Polythene 125, (125), 134, (135), 146, 462, 885, diseases of 347 902, 967 early collectors of 17 Pomegranate 1084, (1083), 1090 for children's gardens 1076. Pondweed 480, (1083) for town gardens 1100 Pontederia (466), 475, (477) importing 361, 1198, 1199 Pools 456 in the Bible 1088-1093 cleaning 469 running 26 concrete 458, (460), 1157 non-flowering 47 alkalinity of 460 quick-return 1078 building (439)

oals — continued	Presents, plants as 1085
for children's gardens 1075	Preserving 832-857
formal and informal 458, (465)	bottling 846
in the Bible 1089	butters 839
bt town gardens 1097	cainting 851
livestock in 468	chutheys 844
miscellaneous containers as 458, 461	conserves 836
planting 463, 467	crystallization 857, 865
polythene sheeting for 462	deep freezing 856
pre-labricated 461	drying (ruit 855
raised (1157)	for winter use 853
types of 458	fruit cheesen 837
winter care of 463	fruit syrups 834
oplur 131, 570, see also Populys	iams 832
opples 165, 173, 209	Jellies 837
history 24	marmalades 835
peus 404	pickles 840
propagation 128	spiced fruits 844
oppy of the dawn 573	Prickly poppy 149
Opulus 570, 577	Primroses (345), 484, (1082), 1101, 1112
orcupine quill 476	
ortugal laurel 523, 555, 360, 1102	Primula vulgaris (419)
silver leaf disease in 369	Primulas 484, 566, (909), 1113
ortulaca 165	allergy to 911
ot marigold 149	alpine 290, 294, 295
ot plants, exhibiting 1068	candelabra 484
	diseases 356, 372
Potamogetou (478), 480 Potash 101, 102, 107	for the sink gurden 1061
otato vine 547	history 22, 24
otatoes 1943	in the greenhouse 910
	leaves 66
as a cleaning crop 1043	pests 405
certification scheme 361, 1043	propagation 118
clamp 1046, (1046)	Prince's feather 148
diseases 360, 376, 378, (379), 1044	Privet 554, 560, 570, 1102
division 131	clipping 549
exhibiting 1067	common 555
general care 1044	Privet thrips 410
history 17, 32	Propagating cases 915
pests 383, 384, (387), 388, 397	Propagating frame 124, 914
planting 1044, (1044), (1045)	Propagation 116-143
preparing tubers 1043, (1045)	adventitious roots in 34
salad 1047	by budding and grafting 136
tubers 57	by cuttings 123
varieties (969), 1046	by division 129
wine 831	by layering 132
otentilia 213, 217, (219), (416), 491, 500, (521),	methods (116)
522, 530, 577, 1109	mist propagator for 919, 932
ulpine 190, 293, 294, 295	rooting media for 124
ot-et-flour 679, (965)	seminal 118
ot-herbs 29	suckers 131
ot-pourri 864	tubees 131
ots 121, 122	vegetative 123
clay 837	Pruning 485-491
open-ended 902	alms of 465
plastic 887	calendar for 491
otting compost 106, 111, 887	cordon-trained trees 489
oultry manure 104, 106, 114	heading back (485)
owdery mildews 365	Jarge branches (490)
Payer plant 643, 653	Lorette 703, 706
e-emergence ros 971	spar system 705

Radishes continued Pruning - continued varieties 1048, (1048), 1049 Summer 489 winter 1048 terminology (486), (487) thinning out (485) time for 488 tools (488), 489 Pramus (493), (498), (502), (503), 522, 530, 531, in lawns 411 555, 560, 565, 809, 1079, 1102, 1103, 1104, 1107 Raisin wine 831 Raking 96 history 22 persion 523 Ramondo 290, 294 Ranunculaceue 67 proning 489 Pseudo-bulbs, of orchids 923, 927 Presidotruga (496), (502), 523 Previdium aquil/mum (423) diseases 372 Rapulia 290, 1109 Presis 588, (588), 677 Raspberries 786 Puccinia menthae 368 Pelmonaria 213, 217, 220, 579, 1100 Pulsarilla 213, (218), 290, 293, 1076, 1100 Purple loosestrife 483 jam 835 Purstane 165 Puschkinia 320 pruning 491 Putting course (612) Pyracantha 300, 530, 531, 546, (554), 555, 560, 1100, 1102, 1103 propagation 119 Pyrethrum 213, (218), 220, 570 wine 231 pests 405 Pyrus 364, 576, 1107 Rata 1163, (1164) Rebutio 630 jelly 839 wine 831 Quaking grass 591 Quamash 315, 481 Quercus (497), (503), 523, 555 Ouick 511 Reed mace 476 Reeves, John 21 Quick-return plants 1078 Reptiles 1168 Ouinces 491, 801 ielly 838 Resedo 165, 1078 marmalade 835

R

Rabbits 695, 1162, (1162) law concerning 1194 Radishes 1047, 1079 peats 388, 389

varieties 802, (805)

Raffin 138, (138), (139) Rauged robin (422) Ragwort 215, 484, 526, 1200 Rainbow cactus 623 Ranunculus 214, 220, (417), 475, 480 alpine 290, 293, 295 autumn-fruiting 788 certification scheme 361, 786 diseases 349, (359), 364, 369 pests 384, (391), 392, 396 training (787), 788 varieties 788, (789) weed control 415 Ruspberry beetle (391), 396, 749 Raspberry mosaic (359) Rat's tail cacrus 620 Ravenholst Ivy 652 Red currants 790, (791) protection from birds 792 varieties 792, (792) Red hot poker 207 Red mountain orach 566 Red spider mite 196, (198), 400, 618, 641, 1022 Rheum 573 Rhipsalidepxis 630 Rhizomes 57 propagation 130, (130) Rhododendron carawbianar 20 Rhododendrons and azalens 530, 531, 532-538, 1102, 1107 alpine rose 533 diseases (367), 372 history 16, 17, 20, 24, 38, 533

layering 132, (132)

management 491, 500, 501, 535

varieties (333), (535), 536, (536), (537)

pests 400, 405, (406), 409

planting 497, (534), 535

Rhadohypaxis 190, (290), 673	Ross - continued
Rholeissus rhomboldea (632), 659, 664	carrina 265
Rhuburb 977, 1049	centifolia 166
and ginger jam 835	gallica 266
diseases 377	multiflora as stock 137, 265
peuts 388	rabrifulia 565
varieties 1049	rugara 131, 255, 265
wine 831	as stock 137, 266
Rhui 64, 130, 131, 500, 524, 530, 531, 562, 565,	Rose upbid 404
(568), 1102	Rose geranium jelly 838
Ribbon grass 593	Rose hip syrup 855
Ribes 500, 524, (524), 530, 570, 1102	Rose moss 165
Ricinus 119, 167	Rose of heaven 161
Ridging 95, (96)	Rose of Sharon 517, 1101, 1106
Ring culture of tomatoes 902	Rose thrips 410
Ring turf-renovator 612	Rose, white, of York 525
Robinia 524, 530, 570, 1104	Rosemary, see Rosmuelmio
pseudoucacia (494), (502)	Roses 252-272
Rock for gardens, expense of 296	bush 255, 258, (259)
Rock gardens 279-303	cuttings 129, 266
alpines for 279	diseases 261, 266, 348, 353, 364, (367), 369,
annuals for 149, 164	373
bridge for (1131)	development of (46)
construction 296, (296-301)	exhibiting 1073, (1073)
dwarf azaleas for 538	floribunda 255, (257), 271, 1100
dwarf aproces for 522	varieties 269, (269)
history 20	for hedges 555, 560
management 279	formal garden for (263)
miniature (299), 303, 672	general treatment 265
moraine and scree 302	greenhouse 911
patha in 300	history 16, 17, 26
pesta 280, 281	hybrid tea 255, (259)
plants to avoid 280	varieties (252), (256), (259), 267, (267), (268).
roses for 256	(271)
types of rock 298	in children's gardens 1075, 1078
water in 300, (302), (303)	in slak gardena 256
Rock jasmine 149	Japanese (3)
Rock rose (345), (508), 510, 1093	for stock 137
Rocket larkspur 156	miniature 256, 673, 1113
Rodents 1163	varieties (257), 272, (272)
Rodgersta 484	pergolas and arches for 256, (262)
Rommeya 567	pents 261, 264, 266, 391, (395), 404, 405, (406),
propagation 129	408, 409, 410
Roof-top gardens (1084), 1085	propagation 129, 137, 265
Rook (1174), 1176	pruning 260, 483, 491, 301
Root 51, 53, (54)	ramblers and climbers 235, (253), 346
biological function of 51, (52-55)	varieties 271
cuttings (127)	"rose sick" soil 260
in leguminous plants (87)	shrub 524, 530
maggots 389	standard (254), 255
stock 136, 687	budding 266
Root mealy hug 618	planting 258, (259)
Root-absorption of water solution 52	stock for 266
Root-ball 497	stratification of seed 119
Rooting cuttings 127	walls for (262)
Roots of trees, law concerning 1195, 1200	weedkillers for 420, 424
Root-top garden 1084, (1084)	Resemble limit 500, 525, 530, 531, 556, (557), 560,
Rosa \$24, 555, 565, 1103, 1109	(361), 372, (859), (860), 869, (869), 1100, 1102, 1107
alba 266	Rotation plans 352, 970, (970), (971)
Bourbon 266	Profession huma 3384 5 to 15 to 15 to 15

Rowan 526 Sature in 870 jelly 838 Squerkraut 853 Royal fern 584 Sqururus (466), 476 Royal gardens 30 Savory, summer and winter 870 Royal gardens of the Bible 1089 Savoys, see Cabbages Royal Horticultural Society 21, 24, 34, 239, 1062 Sawdust 107 Rubber plants 640, 649 Sawflies (391), (394), (395), 397, (406), (407), 409 Rubbish, law concerning 1198 Saxifraga 291, 293, 294, 295, 1109, 1113 Rubuz 491, 501, 525 Scabiasa 167, 214, 217, (219), 220, 1079 Rudbeckia (163), 167, 214, 220, 367, 1100 Scabious 214, 1079, see also Scabiosa pests 405 pests 404 Rue 869, (869), 1092, see also Rueu Scale insects (395), 397, (397), 398, (399), 401, Rugby football plant 656 (406), (407), 409, 618, 641 Rumex (417), 870 Scarlet flag 161 Rush (422), 474 Scarlet sage 167 Russian vine 546 Scarlet trails 646 Rust diseases (355), (358), (362), (366), 368, 369, Scarlet turkscap 327 (370), 372, 373, 374, (375) Scented paeony 209 Ruta 563, 567, 579 Scentless mayweed (413) Rye-grass 1096 Schefflern 660, 665 Schizanihus 118, 147 Schlambergera 630 Scilla (319), 320, 1083, 1113 Scindapaus aureus 661, 664, 967 Scion 136, (139) Scirgus 476 Scolopendrium valeure 584 Scotch heather 507 Scotch laburnum 518 Scottish finme flower 547

Saffron 305, 1092 Saffron spike 642 Sage 167, 214, 563, 860, (860), 863, 870, (870) Sagirtaria (466), 476, (477), 1082 St. Bernard's lily 186, 643 St. Dubeoc's heath 512 St. John's Wort 130, 288, 517 St. Julien A (East Malling) stock 720, 773 Saintpuulta 659, 664, 676, 919 in a bottle (674) leaf-cuttings 127 under glass (881), (905) Saluds, early 914 Salicornia herbacea 615 Salix 291, 295, 499, (499), (500), 501, (503), 525 Sulpiglousis 167 Salaify 1050 Salvia 144, 167, 214, 217, 220, 561, 562, 561, (363), 565, 570, 572, 577, 1080, 1100. 1107,1113 diseases 364 pesis 404 Sambucus 525, 530, 570, 578 Sandwart 284 Samerieria 659, (662), 664, 665, (678) Santolina 525, 530, 531, (563), 576, 861, 1113

Scree 302 Screens 1140, (1145) for town gardens 1097 hedging 548 lattice 1097 planting 546 Scrophulario 579, 1100 Sea buckthorn 516 Sea holly 200, 567 Sea lavender 207 Seakale 1050 varieties 1051 Seakale, decorative 196 Seakale-beet 995 varieties 995 Seaweed 107, 108 Secateurs 124, (488), 489 Sedam 214, 217, 220, 291, 566, 567, 579, 630, (630), 661, 663, 666, 673, (678), 1081, 1101, 1109 alpine 291, 293, 294, 295 leaf-outtings 618

ulpine 291, 293, 294, 295 leaf-cuttings 618 Seed beds, preparing 119, 144 Seed box (121) Seed-leaves 123 Seedlings, diseases of (363), 364 pricking out 123, (123), 147 recognition (45 vegetables thinning out (974), 975 Seeda Act 1920 1199

Superior 291, 293

Sarcococca 1106

Satin flower 292

cutting back 28 t

Seeds, biological function 47, (50) Silk tassel bush 345 dispersal 70 Silver bell 515 formation 70 Silver birch 507 sermination 48 Silver leaf (355), 368, 372 hybrida 75 Silverweed (416) in children's gardens 1077 Simurine 414, 415 propagation 118 Sinopis alba (418) saving 75 Sink gardens 303, 1109 sowing 119 as children's gardens 1080 storage 118 Sistan 400 stratification (19, (119). Stsyrinchium 292, (292), 673 treatment against plant diseases 357 Skimmia 526, 531, 1102 types 118 Slater 1182, (1183) Self-heal (602) Slipper flower 149 Selimum 571 Sloe wine 831 Sempervirum 291, (291), 293, 294, 295, 566, 673, Sloping sites, dealing with 1118, (1119) Slow worm 1169, (1169) rust (370) Slugs 277, (383), 384, 389, 397, 989, 992, 1061, Senecio 215, 412, 476, 484, 491, 300, 526, 530, 1182, (1183) 562, 563, 576, (614), 631, 1102 Small bindweed (416) Valgaris (412) Smallest of all 651 Sensitive fern 584 Smoke bombs 356, 888 Sensitive plant 1078 Smoke tree 565 Sequestrene 354, 373, 535 South 277, 384, 1182, (1183) Sequala 366 Smake plant 659 Sewage sludge, dried 104 Snake's head fritillary 482 Shallots 1051, (1052) Snakes 1168, (1169) certification scheme 361 Snake-skin plant 651 diseases 377 Snapdragon 149 exhibiting 1067 Sneezewort 204 pests 388, 392 Snowball bush 529 varieties 1052 Snowberry 958, 1103 Shneta dainy 193 history 21, 38 Shellestone 711 Snowdrop tree 515 Shepherd's purse 352, (413), 599 Snowdrops 317, 1101 Shirley poppy 165 history 24 Shoddy 107 in flower arrangement 963 Shrews 1161, (1161) pests 408 Shrub roses 324, 530 Snowflake 319 Shrubby cinquefoil (521), 522 Snowy mespilus 505 Shrubby ragwort 526 Souny blight 935 Shrubs and trees 492-531 Sodium chlorate 414, 421 cuttings 129, 504 Soll 76-92 for autumn colour 531 acid 16, 92, 144, 423 for chalky soils 530 alkalinity 16, 92 for penty spils 530 analysis 77, (78) for poor soils 531 chalky 34, 79, (80), 84 for shade 531 chemistry 91 for town gardens 530, 1101 clay 77, (81) for window-boxes 1113 colour 84 general cure 497 components 77, (78) penis and diseases 504 damp 422 planting 494, 496 drainage 84, 85, 98 suggested plants 503, see also Foliage grassing down 84 Siberian bugloss 481 in town gardens 1096 Siberian wallflower 170 living organisms in 87 Sidalcen 215, 217, 220, 1101 management 79, 82 Siebold, Philipp von 22 micro-organisms 76, 86, 87, 88 Silene acquite 292, (292), 293, 295 moisture 88, 90, 91 vulgaris (416) chart 90

Soil — continued	Spiders and harvestmen 1182, (1183)
nitrogen-absorbing bacteria 85	Spider-wort 216
nitrogen cycle in (86)	history 18
organic matter 85, 86	Spikenard 1089, (1090), 1092
origin 76	Spinach 1053
population 77	diseases 365, (379)
profiles 76, 80, (81)	New Zealand 1054
sandy 77, (80), 422	pests 384
silt 77	varieties 1053
sterilization 356, 918	Spinach beet 1054
structure 82, (82), 83	Spindle tree (345), 513
testing 91	pests 404
texture 79	Spiraea 130, 201, 527, (527), 531, 1102
tilth 78, 83	false 526
types 79	gölden 370
warming 913	berbaceous 201
water retention 89, (89)	pesta (407), 409
wet (81)	pruning 491, 501
Soil operations 93-97	Sports 14, 25
disging 93	Spotted flycatcher 1178, (1179)
liming 92	Spotted laurel 1101
maintaining a good tilth 63	Spraying, damage by 602, 1196
mulching 97	Sprays 337, 380, 381, 684, 709
ridging 95	for application of chemicals 360, 414
rolling 96	Sprinklers, water 977
treading 96, 972	Spruce (495), (503), 522, 557, see also Pices
watering 90	diseases 373
Soil-blocked plants 976	Spurge 201
Solumum 546, (547), 1104	Squashes 1055
Soldanella 292, 293	varieties 1055
Solidago 215, 217, 220, 1101	Squirrel's foot fern 587
division 129	Squirrels 1162, (1163)
pests 403	Stachys 215, 217, (561), (562), 563, 577, 1101
Solomon's seal 130, 1106	Stag's horn fern 388, 658
Soot 104	Stag's horn sumach 131, 524, 1102
Sophora japonica 1104	Staging 886
Sorbaria 526, 572	Stapelia 631
Sorbus (495), (502), 526, 531, 576, 1104	Star of Bethlehem 320, 1101
Sorrel 411, (859), (860), 870	Star of the veldt 136
Southernwood 491, 505, 550, (550), 571, (859),	Starlings 1179, (1179)
\$70	Station 207
history 17	Station sowing 972, (973)
Spanish bluebell 320, 1101	Stellacia media (412)
Spanish broom (526), 527	Stems, structure of 54, (56)
Spanish thrift 284, 1081	Stemocurpus simuetus 661, 664
Sparmannia africana 967	Steps (1117), 1129, (1131), (1132)
Sparring 593	Stereum purpurcum 368
	Sternbergia 320
Spartium 491, (526), 527, (527), 530, 531	Srips 592
Spathiphyllum wallisii 661, (663), 666	Stoat 1164, (1165)
Spatterdock 475	Stock 161, 172
Spear thistle 1200	Stock, new, diseases of 353, 364, 373
Spearmint 868	for budding 136
Species, description of 28	Stock dove (1170), 1172
Speedwell 280, (412), (416), (602)	Stocks 118, 161, 172, 1113, see also Matthiola
Spergula urrenzia (423)	diseases 373
Sphagnum mosa for air layering 134, (135)	downy mildew on 365
Spiced Fruits 844	flowering 1080
Spices in the Bible 1089	night-scented 161
Spider plant 153, 643	Virginian 161, 1075 1076

Stoke's aster 215 Stokeria 215, 217 Stone fruits, residual chemicals 414 Storm damage, prevention 1217 Stratiotes 479 Strawbetries 793, 1107 alpine 795 certification scheme 361 conserve 836 diseases 349, (359), 364, 365 feeding 795 in barrels 795, (796), 1107 iam 835 pests 384, 388, 392, 408 propagation 132, (133), 794, (794) remontant 796 seeds 70 varieties (793), 795 Strawberry tree (501), (503), 505 Strawflower 157 Stream gardens 464 Subsoil 76 Succulents 614-631, see Cacti and succulents Suckers 131, (486), 501, 504 Sulphate of ammonia 102 Sulphate of potash 102 Sumach 130, 524 Summeradonis 148 Summer everess 160 Summer holidays, care of the garden during 1217 Summer-flowering hyacinth 1101 Sup rose 288 Sunflower 157, 160, 205, 871, 1079 Sunken garden (1156) Sun-ray plant 660 Superphosphate of lime 102 Swallows 1171, 1173, (1175) Swedes 1055 diseases 365, 377 pests 388, 389 varieties 1056 Sweet bay tree 518, 1107 Sweet corn (891), 892, 1056 diseases 377 varieties (1056), 1057 Sweet flag 472 Sweet peas 273-278 bush-trained 275 classification 274 cordon-trained 276 damage by birds 277 diseases 277, 365, (370) exhibiting 1073, (1073) varieties for 278, (278) for town gardens 1113 history (23) methods of growing 275 pevis 277, 404

staking 276, (276) types 274 Sweet pear - continued varieties (273), 277, (278) Sweet rocket 172 Sweet sultan 152, 1079, 1112 Sweet William 172, 1101, 1113 diseases (370), 373 seed sowing 122 Sweetheart plant 658 Swifts 1171,1173, (1175) Swiss chard 995 Swiss cheese plant 653 Sword fern 588 Swordfish plant 651 Sycamore 70, 1080 Synchytrium endobioticum 360 Synge, Patrick 24 Symphoricarpos 579, 1103 Symphysum 579, 866 Syringa 500, 501, 527, 530, 531, 556, 1102, see also Lillac

Syrup, from berried fruits 834

T

Table decoration (934) Tageles 146, (163), 167, 1080, 1101, 1113 diseases 373 Tamarisk, see Tomaria Tamerix 528, 556, (557), 360, 572 pruning 491, 499 Tanacetum vulgare 871 Tansy (859), (870), 871 Tap-root (52) Tar oil 390, 391, 392, 394, 395, 397, 401, 410 Taraxacum officinale (419) Tarnished plant bug, 404 Tarragon (860), 871 vinegar 871 Taxus baccara (498), (301), 528, 530, 558, 570, Tea plant, history 22 Tellima 573, 1106 Tennicy agreements 1197 Tenby daffodil 312 Tenni-quoits pitch (611) Tennis court, grass 610 Terraces 1096, (1099), 1135, (1137) Thullu 476 Thaliereme 215, 217, (219), 567, 1101 Thiram 145, 357, 362, 372 Thistles 415, 421, 1076 creeping 1300 Thorn 511

Thorpbury Castle garden 30	Tree mallow 207, 1079
Thrift 186, 284	Tree of kings 647
Thrips 337, (387), 388, 397, (403), 410	Tree tomato 961
Thrusbes (1176), 1177	Trees 492-531
Thuju (493), (502), 528, 530, (558), 559, 560	diseases 504
Thyme 66, 292, (839), (860), 861, 871, 1113	for town gardens 1104
creeping 282	from need 1080
Thymus 292, 293, 295, 570, 871, 1109, see also	in the Bible 1089
Thyme	law concerning 1195, 1199, 1200
Tiarella 292	on terraces (1138)
Tickseed 153	ornamental, pruning 489
Tiger lily 330	pests 405, 409, 504
Tiles for paving 1096	poisonous 1200
Time-of-day plants 1075	preserving shapes 504
Tisanes 864	raised beds as surrounds for (1138)
Tits (1176), 1177	seats round (1155)
Toadflax 161; 288, (418)	suggested plants 305
ivy-leaved, history 32	Trellis work (540), 1097, (1145)
Toads 1166, (1166)	Trespuss of animals 1194
Tobacco plant 144, 164	Trichocerrus (614), 631
Tobacco viruses 1058	Trifolesum repens (417)
Tolinien menzies(i 673, (678)	Trinity flower 216
Tomato and apple thurney 844	Triplenera permun maritimum (413)
Tomatoes 899, 1057	Tritelela 320
bush 1060, 1077	Trollins 216, 484
chutney 845	Traparalus 28, 168, 547, 567, 1078, 1107, 1113
diseases 353, 356, 364, 377, (379), 1059	Trough garden 279, 299, 303, 461, 1109
dwarf 1060, 1077	Tsuga 559, 560
exhibiting 1068, (1068)	Tubers, division 131, 244, (244)
history 17	Tubs, plants in 461, (461), 1107, (1108)
juice 849, 885	Tulips 313, 955
outdoor 1057, (1059)	corrage 313
general care 1058	Darwin 267, (304), 313, (314)
varieties (969), 1059	diseases 357, (370), 373
pickle 842, 843	double early 313, (314)
purce 848, 854	forcing 668, 671, 919
sauce 845	history 18, 24
seed saving 70	in children's gardens 1083
under glass 899	in town gardens 1101, 1107, 1113
pests 400	lily-flowered 313, (314)
varietles 903	offsets 131
Topiary 489, 549, 551, 558	parrot 313, (314)
Town and Country Planning Act 1947 1200	propagating 131, 1087
Town gardens 1094-1115, (1094), (1098), (1099),	single early 313, (314)
(1102), (1105), (1108), (1110), (1114)	varieties 313, (313), (314)
lighting 1097	wild (314), 315
Jupins for 207	Turf, see Lawns
perennials for 217	Turkscap fily 327, 329
planning 1096	Turner, William 17
Texina 970	Turnip cabbage, see Kohl rabi
Trace elements 104, 105, 108	Turnip fles beetle 1023, 1060
Tradescant, John 18, 32, 383	Turnip gall wezvil (387), 389
Tradescantia 216, 217, 220, 661, 666, 676, 1101,	Turnips 1060
1115	diseases 377
history 18	dispersal of seed 70
Trailing plants (1117), 1144	hot beds for 914
Trapa (466), 479, (479)	pests 384, 388, 389
Traveller's jug. see Clematis	varieties (968), 1060
Treecreeper [17]	Wine 831
Tree Jupin 519	Turtle dové (1170), 1172

Tweedie, Ruth 24 Typhu 476

U

Ulex \$28, \$30, \$31. Ulmus \$56, \$70 Umbrells tree 660 Um plant 642 Ursinia 168

V

Vaccinium (528), 529, 530, 531 Valerian 192 Valeriana 571 Valitimeria 1082 Vanda caerulea 922 Vanillis ice plant 656 Vapam 400 Variegated arrowhead ivy 652 Variegated grasses 593 Variegated yellow archangel 1106 Variety, definition of 28 Vanca 949. Vegetables 968-1061 application of weedkillers 420 catch crops 972 crop rotation 970, (970), (971) diseases (374), (375), 376, (378), (379) drainage 969 drought 977 early 914 effect of climate on 979 exhibiting 1064 for deep freezing 856 in the Bible 1091 inter-crops 972 manure 977 permanent crops 976 pests 385, (386), (387), 388, 975 planting 975 preserving 846, 856 seeds 972, (973), 978 chitting 974 facts and figures 978

Vegetables, seeds - continued selection 973 sowing 972 treating 973 **soits** 969 sowing 972 sterflizing, time-table for 852 thinning seedlings (974), 975 under glass 889, (890), (891) watering 977 weed control in 420, 424 Velich berry 808 Veitch, Harry 21, 22 Venidium 168 Ventilation, automatic 885 for orchids 923 Verbuscum 173, 216, 217, 577 propagation 127 Verbena (162), 168, 1107, 1113, 1115 lemon, for flavouring 838. Jernon-scented 519 Veronico 216, 217, 220, 491, 563, 571, 577, 579, alpine 292, 293, 293 propagation 282 downy mildew on 365 filiformis 280 hederifolia (412) officinally (416) Fiburnum 491, 500, 501, (526), 529, 530, 531, 572, 1102, 1107 Villargia 476 Fines 130, 572, 579, 1106 Vine weevil (399), 401, 404 Vines 547, 815 cordon pruning \$16, (\$17), 818 cultivation 816 Guyot pruning 818 double 818, (819) dwarf 818, (819) single 818, (820) in the Bible 1091 leaves in flower arrangement 961 pests 401 planting \$16 propagation 127 ripening and picking \$20 soil and preparation 815 spraying \$20 under glass 895, see alm Grapes varieties 821, (822) wall-trained (819) Vineyards in garden history 29 Viola 267, 566, 1080, 1113 alpine 292 cuttings 263 disenses 373 dispersal of seed 70 exhibiting 1071 Violets 861, (1082)

Violets - continued Water gardens - continued diseases of (370), 373 oxygenators 467, 469 aweet 871, (871) plants for 470, (469-473), (477-480), (482) under cloches 892 tubs as (461) Viper's bugloss 156 Water hawthorn 473 Virginia creeper 347, 378 Water heating, electric 917 Virginian stock 161, 164, 1075, 1076 Water hyacinth 478 Virus diseases 348, 369, 371, 372, 373, 376, Water lilies (456), 457, (469), (470), (471) 377 care and management 467 control of 361 bardy, list of 470 symptoms 349 methods of growing 463 vectors of 349, 385 pests 404, (407) Vincaria 161, 208 Water milfoil 475, 480, 1082, (1083) Vitis 547, 561, 565, (568), 578, 961, 1104, 1113, Water plantain 473 Water primrose 474 see also Vines Vittaria 588 Water snails 468, 1083 Voles [164, (1164) Water soldier 479 Velesia splendens 662, 664, 666, (667) Water violet 480 Water willow 473 Watercress 1061, (1061) Waterfall plant 643 Waterfalls 301, 462 Water-melon peperomia 656 Weasels 1164, (1165) Weatherboards 1140 Weeder bars 414 Weedkillers 411 Wall pepper 291 for lawns 411, 599, 602 Wall plants 539-547, 1103, for paths and waste ground 414 Wallflowers 170, 1101, 1107, 1113 precautions 414, 420 diseases 373 trade names 421, 424 dwarf 1080 Weeds Act 1959 1200 pests 169, 405 Weeds 181, 227, 411-424, (412), (413), (416-419), Walls 1132 (422), (423) construction 1132, (1133), (1134), (1135) as soil indicators (418), (419), (422), (423) fruit trees for 683, (689) as spreaders of diseases 352 roses for (262) clearance in hedges 549 trailing plants for 541, (1117) climination by double green manuring 114 Walnuts 812 history of 16 bush trees 812 in lawns 599, 602, (602) leaf blotch on (355) in rock gardens 281 pickled \$13, 843 in water gardens 478 pruning 489 law regarding 1200 varieties 813, (813) perennial, in herb gardens 859 Wandering jew 661 treatment 411, 421, 424 Wandering sailor 661 Weeping fig 649 Warbiers 1178 Weeping pear 564, 576 Ward, Dr. Nathaniel 21, 674 Weeping willow (500), (503), 525 Wasps 381, 1187, (1188) Weevila (387), 389, 392, (394), (399), 401, (402), on fruit, prevention 757 404 Water, neration 979 Welgela 491, 499, (527), 529, 530, 1102 Water chestnut 479 Wellingtonia, history 21

Welsh onion 976

White clover (417)

White currants 790

Whin 528

Western hemlock 559

Western red cedar 1143

White current wine 831

White mustard (418)

Water club 475

Water fringe 475

indoor 1082

miniature (464)

Water crowfoot 480

Water forget-me-not 475

in glass jars (1083)

Water gardens 456-484, (464), (465), (466).

White sails 661 White apruce 558 White willow (499), 525 Whitebeam 576 Whitefly (399), 400, 641, 1004 as carriers of plant diseases 349 Whortleberry 529, 804 Wild bees, pollination by 727 Willow 291, (499), (503), 525 diseases 373 pollination 69 pruning 491, 499 Wilson, Ernest Henry 22, 24 Wilt (351), 371, 377 Wind grass 590 Window leaf 653 Window plant 625 Window-boxes 1080, 1110, (1110) climbing plants for 1113 construction 1110 greenhouse plants for 1113 herbs for 859, 1113 ivy for 652 plants for 1112, 1113 roses for 256 Wineberries, Japanese 806 Wines 823-831 equipment for making 824 procedure for making 825 recipes 828 storing 828 Winter aconite 317 Winter cherry 17 Winter jasmine 546 Winter savory (860) Winter sweet 543 Wireworms 280, (383), 384, 389, 1187, (1187) Wisteria 491, 547, 1104 Witch-hazel 515, (516) Withered tlp disease 734 Woburn Abbey gardens 35 Wood ashes 104 Wood sorrel (346) Woodbine 546 Woodlice (383), 384, 397, 1182, (1183) Woodpecker 1171, 1173, (1171) Woodrush (602)

Woody plants, regeneration 488

Wonlly beard grass 592

Worcesterberry 808 Work, calendar of 425-447 Worms 641, 1169, (1169), 1182 Wren (1176), 1177 Writing with plants 1076

Y

Yarrow 183, (417)
Yellow archangel 1106
Yellow currants 790
Yellow hag 474
Yellow turkscap 327
Yew (503), 528, 558, 560, 570, 1100, 1102
English (498), (503), 528, 558
pests (407), 409
pruning 485, 489
Youngberry 808
Yarror 1103
history 32

Z

Zantedeschia 478
Zanselmeria californica 292, 291, 294
Zea 593
Zebra plant 642, 662
Zebra ruth 476
Zehrina 662, 666, (675), 676, (678), 1115
Zenobia 500, 529, (529), 530
Zeplyramther 320
Zinch 365, 371, 372, 373, 376, 379
Zinnia 168, 952, 1113
disenses 353, 364, 373
Zepoczenia truncatus 631







Central Archaeological Library,				
NEW DELHI				
Call No. 635.03/C.L.G				
Author— C.L.G				
Tille-Complete Library of the				
Bosrower No.	Date of Issue	Date of Return		
K.s. Ranco	27/11/74	24/1479		
Malini	27-9-71	16/5/28		
S. ganeshala	221610	11-7-70		

"A book that is shut is but a block"

GOVT. OF INDIA

Please help us to keep the book clean and moving.